

Appendix C Nozzle PFORs

Final Postflight Hardware Evaluation Report RSRM-29 (STS-54)

September 1993

Prepared for:

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION GEORGE C. MARSHALL SPACE FLIGHT CENTER MARSHALL SPACE FLIGHT CENTER, ALABAMA 35812

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WBS No.

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SS4772



SPACE OPERATIONS

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(NASA-CR-193894) POSTFLIGHT HARDWARE EVALUATION RSRM-29 (STS-54). APPENDIX C: NOZZLE PFORS Final Report (Thiokol Corp.) 86 p

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NOZZLE REQUIRED EVALUATION FORMS LIST

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| C-3 | Nose Inlet-to-Flex Bearing-to-Cowl Joint Condition Drawing Worksheet | Left | Joint #2 | C-3 |
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| C-6 | Aft End Ring-to-Fixed Housing Joint Condition Drawing Worksheet | Left | Joint #5 | C-9 |
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| C-8 | Flexible Bearing, Flexible Bearing Protector, and Flexible Boot Condition | Left | Flexible Bearing Protector, & Boo | |
| C-9 | Flexible Bearing Protector Thickness Measurements | Left | Flexible Bearing Protector | C-12 |
| C-10 | Throat Diameter Measurements (Data Collection Only) | Left | Throat | C-13 |
| C-11 | Outer Boot Ring Char and Erosion Measurements and Flexible Boot Condition | Left 1 | Outer Boot Ring & Flexible Boot | |
| C-12 | Nozzle Subassembly Phenolic Bondline Condition | Left | Aft Exit Cone | C-15 |
| C-12 | Nozzle Subassembly Phenolic Bondline Condition | Left | Forward Exit Cone | C-16 |

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| C-2 | Internal Nozzle Joint Condition | Right | Joint #4 | C-33 |
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| C-12 | Nozzle Subassembly Phenolic Bondline Condition | Right | Aft Exit Cone | C-42 |
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| C-12 | Nozzle Subassembly Phenolic Bondline Condition | Right | Throat | C-44 |
| C-12 | Nozzle Subassembly Phenolic Bondline Condition | Right 1 | Aft Inlet/ Forward Nose Rin | C-45 |
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| C-13 | Cowl Ring Phenolic (CCP) Section Condition | Right | Cowl | C-49 |
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| C-18 | Forward Nose Ring and Aft Inlet Ring Phenolic (CCP) Section Condition | Right | Forward Nose & Aft Inlet Rings | |

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-1 Nozzle Assembly Quick-look Condition

| Motor No.: 360L029 | Side: Left (A) | Date: | <u> </u> | |
|---|------------------------|------------|--|-----------|
| Assessment Engineer(s)/Inspector(s | B): C Duck | | | |
| Nozzle Assembly Quick-look Observed A. Metal Damage Due to Trans B. Phenolic Damage Due to Trans C. Foreign Material? | portation or Handling? | Yes - | No / / / / / / / / / / / / / / / / / / / | Comment # |
| Notes / Comments | , | | - | |
| · - | FIRELL! ON OD OF FIXE! | PH35 | Fとおがらむ | FROM |
| 300° - | 305° | | | |
| 13 Mezzet Woven's | NO DALLAMERS | | | |
| The ELLED FIRM | nc /n Incs | | | • |
| YOZZEE DOUBLE WA | ENPRED IN PLASTIC | | | |
| | | | | |
| 'iminary PFAR(s)?Yes | , | lumber(s): | | |
| Clarification Form(s)?Yes | No Clarification Form | Page No.(s |): | |
| REVISION | DOC NO. | TWR-6422 | 2 VOL | |

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-2 Internal Nozzle Joint Condition

| Motor No.: 360L029 | Side: Left (A) | | | 1/-2 / 6 - | |
|---|--------------------|--------------------|------------|------------|-----------|
| Assessment Engineer(s)/Inspector | (, | | | 1/28/23 | |
| | | | <u> </u> | | |
| Joint: Nose Inlet-to-Flex Bearing- | to-Cowl (Joint #2) | | | | |
| Internal Nozzle Joint Observations: | | | Yes | Ne | |
| A. Gas Penetration in the RTV | | ough)? | ./ | No | Comment # |
| B. RTV Not Below Char Line? | | | | | |
| C. RTV To the Primary O-ring? | ? | • | | | |
| D. RTV Past the Primary O-ring | g? | • | | | |
| E. Uncured RTV? | | • | | | |
| F. Voids Within RTV? | | • | | | |
| G. Foreign Material? | | • | | | |
| H. Heat Affected or Eroded Vis | gin CCP, GCP/SC | P, or adhesive? | | | |
| I. Damaged Phenolics? | | _ | | | |
| J. Bondline Edge Separations? | Use Clarification | Form. | | | |
| K. Phenolics Axially Displaced | From Housing? | _ | | | |
| L. Heat Affected Metal? | | _ | | | |
| M. Unbonded or Blistered Paint | 17 | _ | | | <u> </u> |
| N. Corrosion? | | - | | | |
| O. Excessive Grease in Thread | | _ | | | |
| P. Bolt Hole Damage (Through Q. Bent or Broken Bolts? | , Threaded/Helica | Coil Insert)? | | | |
| R. Metal Damage (Joints or Ho | in.a\ 2 | - | | | |
| | | | ···· | | |
| Notes / Comments | | | | | |
| 1-600 PATH TERMINAT HT 310° SOUT EXT | ED AT NOSE ! | WLET HSG/FWC | ENDK | 71115 | |
| HT 310° SOUT EXT | ENO TO PROM | MRY 0-2145 | | | |
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| minary PFAR(s)? Yes | No | Preliminary PFAR N | | | |
| Cidrification Form(s)? Yes | | | | | |
| Cidification Form(s)?Yes | No | Clarification Form | Page No.(s | s): | |
| | | | | _ 1 | |
| REVISION | | DOC NO. | TWR-6422 | 4.05 | |
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POSTFLIGHT OBSERVATION RECORD (PFOR) C-3

Nose Inlet-to-Flex Bearing-to-Cowl Joint (Joint #2) Condition Drawing Worksheet

| Motor No.: 360L029 | Side: Left (A) | Date: 1/28/93 |
|--|---|---|
| Assessment Engineer(s)/Inspector(s) | | 1 52.0. 17 537 13 |
| Sketch Observations Below (include | Incations and sizes of sketched feat 1-BUBBLED PAINT ENDRICE INTERM 2-INTERMITTENT M | ON FWD FACE OF FESTA- ITTENT FROM O'-180° MENING PARKS 360° |
| Nose Inlet Housing | Forward End Ring | |
| Glass Cloth Phenolic Nose Inlet Assembly Carbon Cloth Phenolic | Silica Clott Phenolic Carbon Cloth Phenolic | Cowl |
| 3-SECT ANOD BRG FLA AT 3:00 4 INC EXCESS GREASE TOLOS 5 GREASE COVERAGE WA MODELLA FOUSING MODELLA FOUSING | IN T-TYPICAL RTY INTERMIXING AS 8-LIGHT CORROS INTERMITTE | 5600 10N CORROSION |
| SEE Pa B-12 Cuification Form(s)?Yes | No Clarification Form | ORIGINAL PAGE IS OF POOR QUALITY Page No.(s): |

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DOC NO.

Thickol CORPORATION

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-2 Internal Nozzle Joint Condition

| Motor No.: 360L029 | Side: Left (A) | Date: | 1-28 | -93 |
|---|---|-------------|--|----------------------|
| Assessment Engineer(s)/inspector(| B): L.E. WILKES / 7 | | | |
| Joint: Nose Inlet-to-Throat (Joint | | | | |
| Internal Nozzie Joint Observations: A. Gas Penetration in the RTV B. RTV Not Below Char Line? C. RTV To the Primary O-ring? D. RTV Past the Primary O-ring E. Uncured RTV? F. Voids Within RTV? G. Grease Inhibiting RTV Backf H. Foreign Material? I. Heat Affected or Eroded Vir J. Damaged Phenolics? K. Bondline Edge Separations? L. Phenolics Axially Displaced I M. Heat Affected Metai? N. Unbonded or Blistered Paint | ill? gin CCP, GCP/SCP, or adhesive? Use Clarification Form. From Housing? | Yes | No \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | Comment # |
| O. Corrosion? P. Alignment Pin Damage? Q. Excessive Grease in Threade R. Bolt Hole Damage (Through S. Bent or Broken Bolts? T. Metal Damage (Joints or Ho | ed Bolt Holes? , Threaded/Helical Coll Insert)? | | | <u>2</u> <u>3</u> |
| (2) TYPICALL XGAT-TO | OR CHARIFICH TON FOR O-NEDIAM GORROSION CLL CIRCUMFERENCE ON DANIAGE OR PIN HOLE FUD ETND RING. | AT METURCAT | 7746-76 A | 74ES/UC 754'S. |
| minary PFAR(s)?Yes | No Preliminary PFAR | Number(s | OF POOR | Weating |
| Clarification Form(s)? Yes | No Clarification Form | TWR-642 | 1 | 4 |

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Nozzie Interface Separation Clarification Form

| Motor No.: 360L029 | Side: 🛛 Left (A) 🗌 Right (B) | Date: 1-28-93 | | | | |
|---|------------------------------|--|--|--|--|--|
| Assessment Engineer(s)/Inspector(s): L.E. WILKES / T. FRESTON | | | | | | |
| Part: Forward Exit Cone (Forward End) Nose Cap (Aft End) Throat Ring (Aft End) Cowi (Forward End)* Throat Inlet Ring (Forward End) Inner Boot Ring (Forward End) Aft Inlet Ring (Aft End) | | | | | | |
| Interface Separation Types: A. Metal-to-Adhesive | D. Within GCP | *G. Adhesive-to-SCP | | | | |
| B. Within Adhesive C. Adhesive-to-GCP | E. GCP-to-CCP F. Within CCP | *H. Within SCP *I. SCP-to-CCP | | | | |
| 15-82 130-161 130-200 130-200 15-82 130-200 15-82 130-200 15-82 130-200 15-82 | Separation Type F A A | Maximum Radial Width , 0 30 .015 .005 | | | | |
| | | | | | | |
| | Corresponding Co | pmment Number(s):/ | | | | |

DOC NO. TWR-64222 VOL

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-4 Nose Inlet-to-Throat Joint (Joint #3) Condition Drawing Worksheet

| Motor No.: 360L029 | Side: Left (A) | Date: 1-28-93 |
|--|-------------------------------|---|
| Assessment Engineer(s)/Inspector(| B): LE. WILKES | |
| Sketch Observations Below (include | locations and sizes of sketch | ed features): |
| EXTENSELOW CHAR L. AS COPT AT 350° CVC THIS DISTINCE, RTV - TOINT MARCINCH M LETH 1.5 IN | INE IOM. R | Throat Assembly |
| Nose Inlet Assemble | | Carbon Cloth Phenolic |
| Carbon Cloth Phenolic | | Throat Housing |
| Glass Cloth Phenolic Nose Inle Housing | | Glass Cloth Phenolic |
| CAEA CAEA ARIGINA FL. C | NIDE C | TPICAL LIGHT CEAT OF CATHORS LER FALL FLANGE VOINT METH CURF THOAT & NOSE HOUSINGS LIGHT-TO MEDIUM RUST CERROSION ROLLN D FULL CIRCL WEFERENCE |
| CAC NEEDENCE ONC BOIT HOLE OR HEZ COL DAMAGE | 10 pt = 5 | ETANT RUST STRING ON PHENOLIC URFACE 3305-3605 PAND INTERMITENT ROUND REMAINING CIRCL MERETICE UPICAL INTERM METAL-TO-POJACSINE FRARATIONS ON TARGET ONLY |
| ication Form(s)? Yes | No Clarification | Form Page No.(s): |
| REVISION | DO SEC | ON TWR-64222 VOL POUR QUALITY |

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-2 Internal Nozzie Joint Condition

| Motor No.: 360L029 | Side: Left (A |) | Date: | 1/26/93 | |
|---|--|--------------------|------------------|--|------------|
| Assessment Engineer(s)/Inspector(s |): R.Quic | þ | 1 | 720, 72 | |
| Joint: Throat-to-Forward Exit Cone | | | | | |
| Internal Nozzle Joint Observations: A. Gas Penetration in the RTV B. RTV Not Below Char Line? C. RTV To the Primary O-ring? D. RTV Past the Primary O-ring E. Uncured RTV? F. Voids Within RTV? | ? | ough)? | Yes | No / / / / / / / / / / / / / / / / / / / | Comment # |
| G. Grease Inhibiting RTV Backfi H. Foreign Material? I. Heat Affected or Eroded Virg J. Damaged Phenolics? K. Bondline Edge Separations? L. Phenolics Axially Displaced F M. Heat Affected Metal? N. Unbonded or Blistered Paint O. Corrosion? P. Alignment Pin Damage? Q. Excessive Grease in Threade R. Bolt Hole Damage (Through, S. Bent or Broken Bolts? T. Metal Damage (Joints or Hole | gin CCP, GCP/SC Use Clarification From Housing? 7 d Bolt Holes? Threaded/Helica | Form | | | SEE RIC-GA |
| Notes / Comments | | | ・さ/足さい さペーク・D | CTIRSQ OF HSG | |
| Clarification Form(s)? Yes | No | Clarification Form | | | , 4 |

TWR-64222

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Nozzle Interface Separation Clarification Form

| Motor No.: 360L029 | Side: 🛛 Left (A) 🗌 Righ | it (B) Date: 1/26/73 | | | |
|---|---|---|--|--|--|
| Assessment Engineer(s)/Inspector(| s): R. Cicile | | | | |
| Part: | | | | | |
| Interface Separation Types: A. Metal-to-Adhesive B. Within Adhesive C. Adhesive-to-GCP | D. Within GCP E. GCP-to-CCP F. Within CCP | *G. Adhesive-to-SCP *H. Within SCP *I. SCP-to-CCP | | | |
| Circumferential Location | Separation Type | Maximum Radial Width | | | |
| 54 - 15 | A | <u> </u> | | | |
| 2 7 | | 2.2502 | | | |
| 152-18- 2 | <u> </u> | 0.250 | | | |
| 2000 | | 2.21=) | | | |
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| | Correspondi | ng Comment Number(s): | | | |

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-5 Throat-to-Forward Exit Cone Joint (Joint #4) Condition Drawing Worksheet

| Motor No.: 360L029 | Side: Left (A) | Date: 1/26/93 |
|---|--------------------|---|
| Assessment Engineer(s)/Inspector(s) | : R. Quick | |
| Sketch Observations Below (include | <u> D</u> | CTY RECOM DALL COLD |
| | <u> </u> | 10°-35°, E 142°, 150° 1255° 310°-335°, E 142°, 150° 1255° NO EXCESS GRENSE IN BOLF HOLES |
| Throat Assen | nbly | |
| Carbon Cloth Phenolic | 3) | Forward Exit Cone Assembly Carbon Cloth |
| Glass Cloth Phenolic | | Phenolic |
| Throat Housing | 4 | Glass Cloth Phenolic Forward Exit Cone Housing |
| EPHICHTON RETURNS AND SOFTE GOT DISCOLONGERED BEREINES TO BE RU | AOHESIVE WI RED | BEASE COLERASS |
| Lification Form(s)?Yes | ~ S- ° | on Form Page No.(s): |
| | | |

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2 Internal Nozzle Joint Condition

| Motor No.: 360L029 | Side: Left (A) | Date: 27 | JAN 1993 |
|--|--|--|----------------------|
| Assessment Engineer(s)/Inspector(| B): Jim PASSMAN, 7 | | |
| Joint: Aft End Ring-to-Fixed Hous | ······································ | | |
| Internal Nozzle Joint Observations: A. Gas Penetration in the RTV B. RTV Not Below Char Line? C. RTV To the Primary O-ring? D. RTV Past the Primary O-ring E. Uncured RTV? F. Voids Within RTV? G. Foreign Material? H. Heat Affected or Eroded Vir I. Damaged Phenolics? J. Bondline Edge Separations? K. Phenolics Axially Displaced L. Heat Affected Metal? M. Unbonded or Blistered Paint N. Corrosion? O. Alignment Pin Damage? P. Excessive Grease in Threade G. Bolt Hole Damage (Through R. Bent or Broken Bolts? | gin CCP, GCP/SCP, or adhesi Use Clarification Form. From Housing? ? | ve? | Comment # |
| S. Metal Damage (Joints or Ho | usings)? | | |
| (2) Usio IN RTU locaTE USID IN RTU locaTE | -RING AT SO- 10 =0 AT 157-160° 1.9 =0 AT 177°-179° 1.3 5"-0.25" SIAMETER =0 ON PFOR C-6 (3.10 No alone or propaga | "CIRC. X 0.18" a "CIRC. X 0.25" INTERMITENT 36 | lide. Wide. D. |
| minary PFAR(s)?Yes | No Preliminar | y PFAR Number(s): | |
| Clarification Form(s)?Yes | No Clarification | n Form Page No.(s): _ | |
| REVISION | _ | DC NO. TWR-64222 EC PAGE | VOL |

POSTFLIGHT OBSERVATION RECORD (PFOR) C-6 Aft End Ring-to-Fixed Housing Joint (Joint #5) Condition Drawing Worksheet

| Motor No.: 360L029 | Side: Left (A) | Date: 27 Jan 1993 | | | |
|--|---|--|--|--|--|
| Assessment Engineer(s)/inspector(s): Jim PASSMAN, TREVOR FRESTON | | | | | |
| 1) Nominal GREAGE CO | locations and sizes of sketched feature | s): | | | |
| Aft End Ring | O.45 Typ. | LIGHT CORROSION, COURT BE WIPED OFF FROM OTHER SIDE. Fixed Housing Inner Boot Ring (GCP) | | | |
| Flexible Bearing — Protector | | | | | |
| Typical S Light GRE UBINT HE | No Clarification Form Pa | nge No.(s): | | | |
| REVISION | DOC NO. T | WR-64222 VOL PAGE C-9 | | | |

SPACE OPERATIONS

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-7 Cowl Insulation Segment Condition

| Motor No.: 360L0 | 29 | Side: Rîş | ghi (B) Les | T (A) | Date: | 27/501 | /93 |
|--|------------|------------------------|-------------------------|---------------------------------------|--------------------------|--------------------------|------------------------|
| Assessment Engineer(s)/Inspector(s): PETE MILLER, L. WILKES | | | | | | | |
| Cowl Insulation Segment Observations: A. Spring Pin Holes Completely Through the Cowl Segment? B. Abnormal Heat Effects or Erosion? C. Soot Between the Cowl Segment and Cowl Housing? D. Bondline Failure Mode? Data Collection Only. | | | | | Yes | No √ / / N/A | Comment # |
| Notes / Comments 1) 0-45 | 50% | (AM) Adhesive Metal | 40% A | (As) Idhesive |) Sesment | 10% (0 | (CS) Les ve segment |
| 45 - 90' | 30% | 11 | 50% | "! Æ | 11 | 20% | (1) |
| 90-135 | 70% | <i>it</i> | 20% | 11 | 11 | 10/6 | i' (, |
| 135-180 | 30% | 11 | 60%c | 11 | 11 | 10% | 77 |
| 180-225 | 40% | ,, (1 | 507c | i' | 17 | 10 % | // (/ // // |
| 225-270 | 50% | (1) | 40% | , (| ,, | 10%. | ,, ,, |
| 270-315 | 45% 65% | | 45% 30% | ;; | i / i/ | 10元 5元 | 11 |
| minary PFAR(s) Clarification Form(s | | YesNo | | · · · · · · · · · · · · · · · · · · · | AR Number(rm Page No | | |

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-8
Flexible Bearing, Flexible Bearing Protector, and Flexible Boot Condition

| Motor No.: 360L029 | Side: Left (A) | Date: 22 T. 1963 |
|--|--|--------------------------------|
| | <u> </u> | Date: 27 Jan 1993 |
| Assessment Engineer(s)/Inspector(| 1. JIM PASSMAN, TRE | LUDE FRESTON, WILKES |
| A. Bearing Protector Burn-Through the Bearing Protector Burn-Through the Bearing C. Bearing Protector Heat Effection Than at Cowl Vent Hole Local D. Soot Between the Bearing Food Bearing Processing Processing Processing Processing Processing Processing Bearing Bearing Bearing Bearing Bearing Bearing Processing Bearing Processing Bearing Processing Bearing Protector Bearing Protector Bearing Bearing Protector Bearing Protector Bearing Protector Bearing Protector Bearing Protector Bearing Bearing Protector Bearing Bearing Protector Bearing Bearing Protector Bearing Bearing Bearing Protector Burn-Through Bearing | ough? g Protector? cts or Erosion Other cations? Protector and Flexible Bearing? Bearing? tector Bolts? ? rosion to Flexible Boot ID? | Yes No Comment # |
| Notes / Comments | | |
| OF BELLY BAND I 3.6" CIRC. X O 0.050". SLAG PRODECTOR AND CAUSED BY S PREVIOUS FIRE OF BOOT MEAS 0.050" DEEP. ALEA OF BLAG | W line with Vent Hole 95" Axial with an Apple Deposits were Found Deposits were Deposited and Depositions Deposited and Depositions Deposited and Depositions Deposited and Depo | |
| Yes | No Preliminary PF | FAR Number(s): |
| Clarification Form(s)? Yes | No Clarification F | orm Page No.(s): |
| REVISION | DOC N | o. TWR-64222 VOL PAGE C-11 |



Flexible Boot Cavity Clarification Form

| Motor No.: 360L029 | Side: 🗹 Left (A) | ☐ Right (B) | Date: 27 JAN 1993 |
|---|------------------|------------------|-------------------------|
| Assessment Engineer(s)/Inspector | (8): Jim Passma | IN, TREUDE | 2 FRESTON |
| Description: EROSION ON B | EARING PROTECTOR | AND FLEX E | BOOT ID AT 50° VENTHOLE |
| Sketch Observations Below (include | | | |
| | | | |
| | | | |
| | | | |
| | Bea | ring Protector - | |
| | | _ | |
| Flex E | Bearing — | | |
| Cowl Insulation Segment | | | -02505 |
| Com insulation Segment | | 0.95" | , /A |
| | | | |
| | | | * |
| | 2.8 | | .050" |
| | | <u> </u> | |
| | / | | ((|
| | L SlA | c peposity | Flex Boot |
| | FOUND | | |
| | • | | o defele |
| | \overline{A} | | |
| | | | • |
| Cowl Housing | | U/ | |
| Cowl | | OBR - | |

APEA OF ELOSION COCATED DIRECTLY IN CINEWITH 50° UENT HOLE.
APPEARS to Be CAUSED BY SLAG.

NOTE: DIMENSIONENOT to SCALE

Corresponding Comment Number(s): ①,②

| DOC NO. | TWR-64222 | | VOL |
|---------|-----------|------|------|
| SEC | | PAGE | -//A |

POSTFLIGHT OBSERVATION RECORD (PFOR) C-9
Flexible Bearing Protector Thickness Messurements

| | Flexible | Bearing Protec | ctor Thickness Mea | | |
|--------------------|------------------------------------|--------------------|---|--------------------|---|
| Motor No.: 36 | 0L029 Sid | ie: Left (A) | | Date: 2.2 | 1273 |
| Assessment Eng | jineer(s)/Inspector(s): | P. Musica | CEN ALEXXI | HEE JR | |
| Record the Flex | ible Bearing Protector | Gas Impinger | ment Area Thicknes | s Measurements | (see figure) Below: |
| Degree Location | Thickness Measurement "A" (inches) | Degree Location | Thickness Measurement "A"* (inches) | Degree Location | Thickness Measurement "A"* (inches) |
| 0 | 713 | 120 | <u>.718</u> | 240 | -711 |
| 10 | 1693 | 130 | <u> 728</u> | 250 | <u>• 6.97</u> |
| 20 | · 765 | 140 | -698 | 260 | 1765 |
| 30 | 699 | 150 | 203 | 270 | 1776 |
| 40 | - 219 | 160 | · 696 | 280 | 10 |
| 50 | 102 | 170 | <u>- 708</u> | 290 | 1146 |
| 60 | 127 | 180 | - 11.4 | 300 | 192 |
| 70 | 618 | 190 | 1116 | 310 | <u>· /a/.)</u> |
| 80 | 6.95 | 200 | 221 | 320 | 193 |
| 90 | · / 23 | 210 | 123 | 330 | 193 |
| 100 | 1.754 | 220 | -716 | 340 | 1 670 |
| 110 | 1. 1. C. | 230 | <u> </u> | 350 | · <u>~~/~</u> |
| | | | | | |
| "A" | | in-li | "A" is the minimum ine with the cowl ve pest gas impingem | int holes. It con | e bearing protector responds to the |
| Notes / Comme | ents | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | Soliminary DE | AR Number(s):_ | OF POOR OUT |
| iminery PF/ | | No | | | |
| Carification Fo | rm(s)?Yes | No | Clarification Fo | rm Page No.(s) | |
| revision . | | | DOC NO | | YOL |
| ME VOICE . | | | SEC | PAG | E C-12 |



REVISION ___

POSTFLIGHT OBSERVATION RECORD (PFOR) C-10 Throat Diameter Measurements (Data Collection Only)

| Inroat | Diameter Measuremen | ts (Data Collection | n Only) | |
|------------------------------------|---------------------|-------------------------------------|---------------|--------|
| Motor No.: 360L029 | Side: Left (A) | | Date: 0/ - 2- | 8 - 93 |
| Assessment Engineer(s)/Inspector(s | s): RPGA/legos | Jed BEN | SON | |
| Record the Nozzle Throat Diameter | • | , | | |
| | | | | |
| | Degree Location | Diameter Measurement (inches) | | |
| | 0 | 55.977 | | |
| | 45 | 56.000" | | |
| | 90 | <u>55. 935</u> " | | |
| | 135 | 5-6.000" | | |
| | | | | |
| Notes / Comments | _ | | | |
| 51-450 | 162 | | | |
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| C .ication Form(s)? Yes | No Cla | arification Form Pa | ge No.(s): | |
| | | | | |

TWR-64222



POSTFLIGHT OBSERVATION RECORD (PFOR) C-11 Outer Boot Bing Char and Frosign Measurements and Flexible Boot Condition

| Outer Boot Hing Cit | THE PROPERTY OF THE PROPERTY O | 3 and rexibit book of | | | | | |
|---|--|-----------------------|-----------------|--|--|--|--|
| Motor No.: 360L029 | Side: Left (A) | Date: 3 | 3/3/93, 2-17-93 | | | | |
| Assessment Engineer(s)/Inspector(s): Jim PASSMAN, MARK CHARK | | | | | | | |
| Flexible Boot/Outer Boot Ring Separation Observations: A. Heat Effects in Boot/OBR Separation? Yes No Comment # | | | | | | | |
| Record the Outer Boot Ring Char a | nd Erosion Measurements Be | olow: | | | | | |
| Station 0° | 90° | 180° | 270° | | | | |
| Location Erosion Char | Erosion Char | Erosion Char | Erosion Char | | | | |
| 8.0 <u>0.08</u> <u>0.99</u> | | 0.08 0.96 | <u> </u> | | | | |
| 9.0 <u>0.09</u> <u>0.9</u> | 1 0.12 0.83 | 0.09 0.88 | <u> </u> | | | | |
| 10.0 <u>0.15</u> <u>0.8</u> | 8 0.09 0.87 | 0.12 0.86 | 0,06 0.80 | | | | |
| 11.3 0.24 0.82 | 0.07 0.94 | 0.16 0.95 | <u>.08</u> 0.82 | | | | |
| Negative Margin of Safety? | Yes No | Station: | Degree: | | | | |
| Pacord the Number of Plies Remai | ning on the Flexible Boot: | | | | | | |
| | Degree P | lies | | | | | |
| | Location Rem | aining | | | | | |
| | 0 | 8.7 | | | | | |
| | 90 <u>3</u> | .3 | | | | | |
| | 180 | .9 | | | | | |
| | 270 <u>3</u> | <u>.4</u> | | | | | |
| Negative Margin of Sa | afety?Yes | No Degree: | | | | | |
| Notes / Comments | (CHAR AND FUSIO |) | | | | | |
| Special Issue 3.3.10 No abwa | ormal erosic in | orterns cr | propagation | | | | |
| 1) - intapire | ical | plies | | | | | |
| Preliminary PFAR(s)? Yes | No Prelimin | ary PFAR Number(s): _ | OF POOR PAGE IS | | | | |
| Cification Form(s)? Yes | No Clarificat | ion Form Page No.(s): | | | | | |
| REVISION | | DOC NO. TWR-64222 | GE C-14 | | | | |



POSTFLIGHT OBSERVATION RECORD (PFOR) C-12 Nozzle Subassembly Phenolic Bondline Condition

| Assessment Engineer(s)/Inspector(s): W/L KES / TELLERS J. Passand P. M. Illed Phenolic Subassembly: Aft Exit Cone Assembly Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal): Degree Location #5-/35 / 77-225 / 225-315 / 35-45 Within Adhesive Adhesive-to-GCP Within CCP Within CCP Within CCP Within CCP Within CCP Within Adhesive Adhesive-to-GCP Within Adhesive Adhesive-to-GCP Within Adhesive Adhesive-to-GCP OO 100 100 100 Phenolic Removal Method: HAMMER, WEDGE & PEEL, MUCH Wolf. Metal Housing Bondline Surface Observations: A. Sost? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Volds in Polysuffide (Aft Exit Cone Polysuffide Groove)? Notes / Comments (1) Doing Internithent of Inboard Suppace; Typical Size 0.05" - 0.10" Dia. Iminary PEAR(s)? Ves No Clarification Form Page No.(s): DONO TWR-64222 Vol. SEC PAGE C-15 | Motor No.: 360L029 | | Side: Le | eft (A) | | | Date: | 2-4- | 93 | | |
|--|---|-----------|------------|------------------|--|---------------------------------------|----------|------------|-------------|-----------|--|
| Phenolic Subassembly: Aft Exit Cone Assembly Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal): Degree Location Metal-to-Adhesive Within Adhesive Adhesive-to-GCP Within GCP Within GCP Within CCP Within CCP Within Adhesive Adhesive-to-GCP Within Adhesive Within Adhesive Adhesive-to-GCP Within Adhesive Adhesive-to-GCP Adhesive-to-GCP Phenolic Removal Method: HAMNEK, WEDGE & PEEL, MUCE WOLL Metal-to-Adhesive A Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Alt Exit Cone Polysulfide Groove)? Notes / Comments (1) Voids in TERNI Heart of Inboard Suparks; Typical Size 0.05" - 0.10" p.a. iminary PPAR(s)? Yes No Clarification Form Page No.(s): DOC NO. TWR-64222 Vol. | Assessment Engineer(s)/Inspector(s): WILKES / TELLERS / TRUCKNAW/DM. Ilvo | | | | | | | | | | |
| Degree Location Metal-to-Adhesive Within Adhesive Adhesive-to-GCP Within CCP Within Adhesive Adhesive-to-GCP Adhesive-to-GCP Adhesive-to-GCP Within Adhesive Adhesive-to-GCP Adhesive-to-GCP CC Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? World (Aft Exit Cone Polysulfide Groove)? World (Aft Exit Cone Polysulfide Groove)? Clarification Form(s)? Yes No Clarification Form Page No.(s): DOC NO. TWR-64222 Vol. | | | | | | | 71.1 | / | 7 101118 | <u>K.</u> | |
| Metal-to-Adhesive Within Adhesive Adhesive-to-GCP Within GCP Within GCP Within CCP Within Adhesive Adhesive-to-GCP Within Adhesive Within Adhesive Within Adhesive Adhesive-to-GCP Within Adhesive Within Adhesive Within Adhesive Adhesive-to-GCP Within Adhesive A Soci? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? World International Method: Wes No Comment Wes No Comment Within Adhesive Clarification Form Page No.(s): Degree Location Netal Housing Bondline Surface Observations; A Soci? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Within Adhesive Within Adhesive Adhesive-to-GCP Within Adhesive Adhesive-to-GCP Within Adhesive Adhesive-to-GCP Within Adhesive Adhesive-to-GCP Within CCP Within C | Record Primary Bondline/Phenolic Failure Mode Percentage (After Hydrolase and Wedge Removal): | | | | | | | | | | |
| Metal-to-Adhesive Within Adhesive Adhesive-to-GCP Within GCP Within GCP Within CCP Within Adhesive Within Adhesive Adhesive-to-GCP Adhesive-to-GCP Phenolic Removal Method: ################################### | | | | | - | Locatio | on | | | | |
| Within Adhesive Adhesive-to-GCP Within GCP Within GCP Within GCP Within GCP Within CCP Within CCP Within CCP Within CCP Within CCP Degree Location Metal-to-Adhesive Within Adhesive Adhesive-to-GCP Within Adhesive Adhesive-to-GCP Phenolic Removal Method: ################################### | | 45-135 | 135-225 | 225-315 | 315-45 | | | | | | |
| Adhesive-to-GCP Within GCP Within GCP Within CCP Metal-to-Adhesive Within Adhesive Adhesive-to-GCP Adhesive-to-GCP Adhesive-to-GCP Adhesive-to-GCP Adhesive A Soci? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Notes / Comments (1) Notes / Comments A Social Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Notes / Comments A Social Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Notes / Comments A Social Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? C. Corrosion? D. Foreign | Metal-to-Adhesive | | | | | | | | | | |
| Within GCP GCP-to-CCP Within CCP Metal-to-Adhesive Within Adhesive Adhesive-to-GCP Adhesive-to-GCP Adhesive-to-GCP Adhesive-to-GCP Adhesive-to-GCP Adhesive-to-GCP Adhesive-to-GCP B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (I) Notes / Comments | | | | | | | | | | | |
| Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics): Degree Location Metal-to-Adhesive Within Adhesive Adhesive-to-GCP 100 100 100 100 100 100 100 100 100 10 | | | | | | | | | | | |
| Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics): Degree Location Metal-to-Adhesive Within Adhesive Adhesive-to-GCP 100 100 100 100 Phenolic Removal Method: HAMMEX, WEDGE & PEEL, MUCH 10014. Metal Housing Bondline Surface Observations: A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Voids / (NTERMI Heart of InBoard Surface); Typical Size 0.05" - 0.10" pia. iminary PFAR(s)? Yes No Clarification Form Page No.(s): DOC No. TWR-64222 Vol. | | 100 | 100 | 100 | 100 | | | | | | |
| Record Secondary Bondline Failure Mode Percentage (After Removal of Remaining Phenolics): Degree Location Metal-to-Adhesive Within Adhesive Adhesive-to-GCP 100 100 100 100 Phenolic Removal Method: HAMMEX, WEDGE & PEEL, MUCE IVOK. Metal Housing Bondline Surface Observations: A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Voids in Nifermittent on Inboard Surface, Typical Size 0.05" - 0.10" Dia. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): | | | | | | | | | _ | | |
| Metal-to-Adhesive Within Adhesive Adhesive-to-GCP Within Adhesive Adhesive-to-GCP Phenolic Removal Method: HAMMER, WEDGE & PEEL, MUCH WOLL Metal Housing Bondline Surface Observations: A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Notes / Comments (1) Notes / Metal Housing Bondline Surface Observations: No Preliminary PFAR Number(s): Intermittent of Intermittent of Typical Size 0.05" - 0.10" pia. | Within CCP | | | | | | | | | | |
| Metal-to-Adhesive Within Adhesive Adhesive-to-GCP Within Adhesive Adhesive-to-GCP Phenolic Removal Method: HAMMER, WEDGE & PEEL, MUCH WOLL Metal Housing Bondline Surface Observations: A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Notes / Comments (1) Notes / Metal Housing Bondline Surface Observations: No Preliminary PFAR Number(s): Intermittent of Intermittent of Typical Size 0.05" - 0.10" pia. | | | | | | | | | | | |
| Metal-to-Adhesive Within Adhesive Adhesive-to-GCP Within Adhesive Adhesive-to-GCP Phenolic Removal Method: HAMMER, WEDGE & PEEL, MUCH WOLL Metal Housing Bondline Surface Observations: A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Notes / Comments (1) Notes / Metal Housing Bondline Surface Observations: No Preliminary PFAR Number(s): Intermittent of Intermittent of Typical Size 0.05" - 0.10" pia. | Record Secondary Bondline | Failure N | fode Perc | entage (A | ter Remov | al of Re | emaining | Phenolics) | • | | |
| Metal-to-Adhesive Within Adhesive Adhesive-to-GCP We have to comment and the surface Observations: A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Notes / Comments (1) Notes / Metal-to-Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? (1) Notes / Comments (1) No | | | | on the growth of | | | | | • | | |
| Within Adhesive Adhesive-to-GCP 100 100 100 100 Phenolic Removal Method: HAMNER, WEDGE & PEEC, MUCH WOLK. Metal Housing Bondline Surface Observations: A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Voids / INTERMITTENT ON INBOARD SURFACE; TYPICAL SIZE 0.05"- 0.10" DIA. iminary PFAR(s)? Yes No Clarification Form Page No.(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): | | | 1 | 1 | | Localit | | 1 | 1 | ı | |
| Adhesive-to-GCP 100 100 100 100 Phenolic Removal Method: HAMMER, WEDGE & PEEL, MUCH WOLL. Metal Housing Bondline Surface Observations: A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Doids INTERMITHENT ON INBOARD SURFACE; Typical Size 0.05" - 0.10" Dia. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): | Metal-to-Adhesive | | | | | | | | | İ | |
| Phenolic Removal Method: HAMMER, WEDGE & PEEL, MUCH WOLL. Metal Housing Bondline Surface Observations: A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Doins / NTERMINENT ON INBOARD SURFACE; Typical Size 0.05" - 0.10" Dia. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): | Within Adhesive | | | | | | | | | | |
| Phenolic Removal Method: HAMMER, WEDGE & PEEL, MUCH WOLL. Metal Housing Bondline Surface Observations: A. Soot? B. Voids in Adhesive? C. Corresion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Doing INTERMITTENT ON INBOARD SURFACE; Typical Size 0.05" - 0.10" Dia. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): | Adhesive-to-GCP | 100 | 100 | 100 | 100 | | | | | | |
| Metal Housing Bondline Surface Observations: A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Voids / NTERMIHENT ON INBOARD SURFACE; Typical Size 0.05" - 0.10" Dia. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): | | | · /• | | - | · · · · · · · · · · · · · · · · · · · | , | | | ļ | |
| A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? (1) Notes / Comments (1) Voids / INTERNITION ON INBOARD SURFACE; Typical Size 0.05"- 0.10" Dia. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): | Phenolic Removal N | Method: | HAMA | MER, I | NEDGO | ع حج | PEC | -C, MU | CH WOI | <u>.</u> | |
| A. Soot? B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? (1) Notes / Comments (1) Voids / INTERNITION ON INBOARD SURFACE; Typical Size 0.05"- 0.10" Dia. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): | | | | | | | | | | | |
| B. Voids in Adhesive? C. Corrosion? D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? Notes / Comments (1) Voids INTERMITTENT ON INBOARD SURFACE; Typical Size 0.05"- 0.10" Dia. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): | | face Obs | ervations: | | | ` | Y 0 \$ | No | Comment | # | |
| D. Foreign Material? E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? (1) Notes / Comments (1) Doids INTERMITTENTIFICATION INBOARD SUBSACE; Typication Size 0.05"- 0.10" Dia. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): | | | | | | | | | | _ | |
| E. Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? (1) Notes / Comments (1) Voids in Polysulfide (Aft Exit Cone Polysulfide Groove)? (1) Notes / Comments (1) Voids / INTERMITTENTITION ON INBOARD SUBFACE; Typical Size 0.05" - 0.10" pia. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form (s)? Yes No Clarification Form Page No.(s): DOC NO. TWR-64222 Vol. | | | | | | | | | | _ | |
| (1) DOIDS INTERMITTENT ON INBOARD SURFACE; TYPICAL STEE 0.05"- 0.10" DIA. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): DOC NO. TWR-64222 VOL | • | (Aft Exit | Cone Poly | sulfide Gr | oove)? | | | | (1) | | |
| (1) DOIDS INTERMITTENT ON INBOARD SURFACE; TYPICAL STEE 0.05"- 0.10" DIA. iminary PFAR(s)? Yes No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): DOC NO. TWR-64222 VOL | | | | | | | | | | | |
| iminary PFAR(s)? No Preliminary PFAR Number(s): Clarification Form(s)? Yes No Clarification Form Page No.(s): REVISION DOC NO. TWR-64222 VOL | | .1 . | , _ | | | | | | | | |
| Clarification Form(s)? Yes No Clarification Form Page No.(s): DOC NO. TWR-64222 VOL | (1) VOIDS INTER | millent | ON IN | BOARD | SURFACE | ミデブ | pical | size 0.0 | 5"- 0.10" | DIA. | |
| Clarification Form(s)? Yes No Clarification Form Page No.(s): DOC NO. TWR-64222 VOL | | | | | | | | | | | |
| Clarification Form(s)? Yes No Clarification Form Page No.(s): DOC NO. TWR-64222 VOL | imines/ PEAP/s\2 | V | /. | Na 5 | 1:! | | | | | | |
| REVISION DOC NO. TWR-64222 VOL | | | | | | | | | | | |
| REVISION | Clarification Form(s)? | Yes | | No C | arification | Form P | age No.(| s): | | | |
| REVISION | | | | | | | | . 1 | | | |
| | REVISION | | | | | NO. | I WK-642 | | | | |



POSTFLIGHT OBSERVATION RECORD (PFOR) C-12 Nozzle Subassembly Phenolic Bondline Condition

| Motor No.: 360L029 | | Side: Le | oft (A) | | Date | 1-29-9 | 3 |
|--|-----------|------------|---------|----------------|-------------|------------|-------------------------------|
| Assessment Engineer(s)/ins | pector(s) | WILLE | SFRE | 5701/L/ | - [51M | MO: = /11 | |
| Phenolic Subassembly: Fo | | | | , | | | |
| Record Primary Bondline/Ph | enolic Fa | ilure Mode | Percent | ige (After Hy | drolase and | Wedge Rem | novai): |
| SIF 10 E 1 | | | | Degrae La | | | |
| Metal-to-Adhesive | 15, | 90-121 | 15 | 15 | | + | tetal |
| Within Adhesive | _ | 10 | 10 | 10 | | | 14 |
| Adhesive-to-GCP | 75 | 80 | 75 | 75 | | | 1/6 |
| Within GCP | | | | | | | |
| GCP-to-CCP | | | | | | | |
| Within CCP | | | | | | | |
| Within Adhesive | | | | | | | |
| Within Adhesive Adhesive-to-GCP | | | | | | | |
| Phenolic Removal M | lethod: _ | | | | | | |
| letal Housing Bondline Sur A. Soot? | ace Obse | rvations: | | | Yes | No | Comment # |
| B. Volds in Adhesive? | | | | | | | 2 |
| C. Corrosion? D. Foreign Material? | | | | | | | 3 |
| lotes I Comments D SEC TO MONTH OF THE D SET THEK CLAPS = D TYPICKE NED-TO-HER PROUND 75% OF CI ACC OF CIRCUMSTRE | 101 -10 | 1. FORM | 1 PAG | E C-163 | | | JD END 14 AKOUND of off |
| ninary PFAR(s)? | | N | Pro | eliminary PFA | R Number(s |): | OF BOOK |
| larification Form(s)? | _Yes | No | Cla | rification For | m Page No. | (s) C-16 A | E POOR QUA |
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PAGE C-16

| | General Hardware Cla | arification Form | |
|--|---|---|---|
| Motor No.: 360L029 | Side: Left (A) | ☐ Right (B) | Date: 1-29-93 |
| Assessment Engineer(s)/Inspecto | | | |
| Description: PAFRICUE BOND | | | |
| LICE OUT 4 PRACES BUT CO TO METAL WILL PULLED HAMA PARTICLA BOID FAIR TO CON ADRES | FOCE THIS OF 90° APART OVE SHREACT. NO CRE, BETTLETAN WE MODE IS D VIVE. | PHENICLIC ER FULL AX, FOR WEDGE THE METO | RETHINAL IS TO WATER— IAC LETNGTH THROUGH TS ARE THEN DR 15TA, THE THE PROPERTY THE |
| CE CCE KINER REMARINE CHINEERENCE AND END GOOD . COMMENT OF COMMENTALE . THE COMMENTERENCE . SCHOOL SINTEREACE . SCHOOL SINTERENCE . THE SOME TO SCHOOL STORT . | THE RETURN AN AXIAL SA THE RETURN AN AXIAL SA THE AFT THE FILD FR AT CCP- TO- M SHOPA THIS TO-ADHESIVE WA | - INCKES NO MIDDLE WOLLT IVA: TOLES WE COP FRACE AGNETA A GOP INTE THOSE SEVENTE TO-ADACSIVE AS FROM PI | FORE HAD TEN INCLES FRIZ, PROVIDE FOR LLLY, MAXIMUM WIDE AN LLLY, SECTION SHOWED CORTO- E MADE THROUGH THE COST RE DRIVEN BETWEEN NENT SEPARATED AT FT HALF, UP TO SHOWE. PEACE. THE RETMAND. UD, SETTINGTED BS. ATCHES PROUND 75% OF THE IN DIAMETER. |
| | | | OF POOR |

DOC NO. TWR-64222 VOL

SEC PAGE C - 16 A

REVISION ____

REVISION ____

Nozzie Subassembly Bondline Adhesive Void Clarification Form

| Motor No.: 360L029 | 9 Side: 🗹 | Left (A) | |
|--------------------|--------------------------|---|-------------|
| Assessment Engine | er(s)/Inspector(s): WILK | | |
| Nozzie Subassembiy | : FWD EXIT CO | ONE | |
| Record Bondline Ad | hesive Void Measurements | and Locations Below: | |
| Degree | Void Size | Location on Bonding Surface | |
| Location | Axial Circ. | Distance From Fwd Distance From A | ft |
| <u> </u> | .70 .40 | 7.4 | |
| _6 | .90 .60 | 29,4 | |
| 77 | .60 .40 | 29.2 | |
| 20) | ,50 ,40 | 28.6 | |
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| Notes / Comments | | ARCL ADRESSE VOIDS WERE OSSITIFE AROUS CHONFERENCE. | |
| RD11 | | Corresponding Comment Number(s): 2 | |

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-12 Nozzle Subassembly Phenolic Bondline Condition

| | 1402216 | Judasse | mbiy Phen | iolic Roual | ine Co | naition | | |
|--|------------|--------------|--------------|-------------|--------------|----------------|----------------------|-------------|
| Motor No.: 360L029 | | Side: Le | eft (A) | | | Date: | 29 JAN | 1 1993 |
| Assessment Engineer(s)/Inspector(s): Jim PASSMAN, TREVOR FRESTON | | | | | | | | |
| Phenolic Subassembly: Ti | hroat Asse | mbly | | | | <u> </u> | | |
| Record Primary Bondline/Pi | henolic Fa | ilure Mode | e Percenta | ge (After | Hydroli | ese and V | Vedge Remo | vai): |
| | _ | | | Degree | | ion | | |
| | 45-135° | 135-225 | 225-315 | 315-45° | | | † | 1 |
| Metal-to-Adhesive | 100 | 100 | 100 | 100 | | | | |
| Within Adhesive | | | | | | | | |
| Adhesive-to-GCP | | | | | | | | |
| Within GCP | | | | | | | | |
| GCP-to-CCP | | | ļ | | | | | |
| Within CCP | | | | | | | | |
| | | | | | | | | |
| Baseri Casandan, Bandiina | | . | | | | | | |
| Record Secondary Bondline | Pallure IV | iode Perc | entage (At | | | | Phenolics): | _ |
| | 1 | 1 . | 1.0 | Degree | Locati | ion | , | |
| Managara Autoritis | | A | / | | | | | |
| Metal-to-Adhesive | | / / | | 1 | _ | | | |
| Within Adhesive | | | / | 7 | | | | |
| Adhesive-to-GCP | | <u> </u> | <u> </u> | | | | | |
| | | | | | | | | |
| Phenotic Removal ! | Method: _ | | | <u> </u> | - | | <u> </u> | |
| Metal Housing Bondline Su | rface Obse | arvations: | | | - | Yes | No | Comment # |
| A. Soot? | | 27.7.0.1.0.1 | | | | . •• | / | Comment # |
| B. Voids in Adhesive? | | | | | | / | | (1) |
| C. Corrosion? | | | | | | | | (2) |
| D. Foreign Material? | | | | | _ | | | |
| Notes / Comments | | | | - / | | | H 2100 | |
| (1) Small Upios Ti | Pically | 0.10-0 | 0.20°Z | DIA LOCATI | 50 inv | ERMHEN COSE | 117 360 . | |
| Notes / Comments (1) Small Voids Ti LARGER Voids AND LOCATIONS | LOCATE | D ACAR | THE AF | = Clast | CATIO | I FAM I | -315 Dec Du-L C-1 | 74 |
| (2) MEDIUM to H | | | | | | | | |
| (a) MEDICAL 18 A | enuj — | | | -WINDE | 14005 | 1 NG 5 | MOIINE D | UKINCE. |
| iminary PFAR(s)? | Yes | N | o Pr | eliminary P | PFAR N | lumber(s) | : | |
| Clarification Form(s)? | Yes | N | lo Cla | arification | Form F | Page No. (| s): <u>C-1</u> | 7.4 |
| | | | | | | | . 1 | |
| REVISION | | | | DOC | NO. | TWR-642 | | |
| | | | | 320 | | | PAGE C-17 | • |



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| Nozzie Subassembly Bondline Adhesive Void Clarification | n Form |
|---|--------|

| Motor No.: 360L029 | | Side: 🗹 L | eft (A) 🔲 Right (B) | Date: 29 JAN 1993 | | | | | |
|---|-----------------|-------------|---------------------|----------------------|--|--|--|--|--|
| Assessment Engineer(| s)/Inspector(s) | : Jim Pass | SMAN , TREVOR FRES | STON . | | | | | |
| Nozzie Subassembly: | THEDAT | | | | | | | | |
| Record Bondline Adhesive Void Measurements and Locations Below: | | | | | | | | | |
| Degree | Void S | Size | Location | n on Bonding Surface | | | | | |
| Location | Axial | Circ. | Distance From Fwd | Distance From Aft | | | | | |
| 240° | 0.70 | 0.25 | | 0.30 | | | | | |
| <u>257°</u> | 0.85 | 0.15 | | 0.15 | | | | | |
| 260° | 2.25 | 0.45 | | 0.15 | | | | | |
| 280° | 0.60 | 0.40 | | 0.10 | | | | | |
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| Notes / Comments | | | | | | | | | |
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| | | | Corresponding Com | nment Number(s):(() | | | | | |
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SPACE OPERATIONS

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12 Nozzle Subassembly Phenolic Bondline Condition

| Motor No.: 360L029 | 1102216 | - | oft (A) | iolic Bonali | ne Condition | | |
|------------------------------------|------------------|---|--------------|---------------|------------------|--|--|
| Assessment Engineer(s)/Ins | pector(s) | | ark | 2 T | llers | <u>. </u> | |
| Phenolic Subassembly: Af | t Inlet/For | ward Nose | | | 11515 | · · · · · · · · · · · · · · · · · · · | |
| Record Primary Bondline/Ph | enolic Fa | ilure Mode | e Percenta | ige (After H | lydrolase an | d Wedge Rer | noval): |
| | | | | Degree | Location | | |
| Metal-to-Adhesive | 315-45 | 15-135 | 35-25 | 125C-318 | | | teta 1 |
| Within Adhesive | | 11.0 | 1-1/- | 13 | | | 41 |
| Adhesive-to-GCP | 9 | | コ | 20 | | | 8 |
| Within GCP | | | | | | | |
| GCP-to-CCP | | | | | | | |
| Within CCP | | | | | | | |
| | | | | | | | - |
| Record Secondary Bondline | Failure N | lode Perce | entage (Ai | iter Remov | al of Remain | ing Phanolics | |
| · | | | (, | | Location | mig Friendics | ,,, |
| | | | [| | | | 1 |
| Metal-to-Adhesive | | | | | | | |
| Within Adhesive | | | | | | | |
| Adhesive-to-GCP | | | | | | | |
| Phenolic Removal N | 0 ~ 4 h ~ | | | | | | |
| Phenolic Removal N | 1etnod: | | | | | | |
| Metal Housing Bondline Sur | face Obse | ervations: | | - | Yes | No, | Comment # |
| A. Soot? B. Voids in Adhesive? | | | | | | | |
| C. Corrosion? D. Foreign Material? | | | | | | | 2 |
| | | | | | - | | |
| Notes / Comments | l) Me | dicina | Corre | Sign D | parince | in-area | 5 24 |
| Special Issue 3.3.6 Add | ۳۰۱۰ معدارد | Joid | £ 10000 | d at | 78° mea | sired | O.Saxial X |
| () | 25 610 | \mathcal{L}_{\cdot} , \mathcal{L}_{\cdot} | 277 Fre | مهر لج بيري و | ind of - | ∞ $< c_{i,\infty}$ | 3 |
| 5.3.11 | old: | 60000 | -184 Tire | No Posi | carone d | oxrucdou | Duce Liver |
| minary PFAR(s)? | Yes | \sum_{N} | | | FAR Number | | 7 |
| Clarification Form(s)? | Yes | N | o Cl | arification F | orm Page N | o.(s): | - 1341 |
| | | —, | | | 9 - 1 - 1 | . , , | |
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PAGE C-18

Nozzle Subassembly Bondline Adhesive Void Clarification Form

| Makes No. 2001 000 | | T-1. \\ | | 2 - 22 | | | | | |
|---------------------|----------------|----------------|-----------------------------|-------------------|--|--|--|--|--|
| Motor No.: 360L029 | | | <u> </u> | te: 2-1-93 | | | | | |
| Assessment Engineer | (s)/inspector(| s): 11.E. | Yark- | | | | | | |
| Nozzie Subassembly: | - 503 | (Full K | ose King | | | | | | |
| Record Bondline Adh | esive Void Me | easurements an | d Locations Below: | | | | | | |
| Degree | Void | Size | Location on Bonding Surface | | | | | | |
| Location | Axial | Circ. | Distance From Fwd | Distance From Aft | | | | | |
| 274 | | <u>. 71</u> | 24 | | | | | | |
| 255.5 | . 40 | .15 | 0.5 | | | | | | |
| 254 | .40 | .20 | 0.4 | | | | | | |
| 245 | .45 | .20 | 0.8 | | | | | | |
| 227 | <u>. 35</u> | <u>.20</u> | <u>2.3</u> | | | | | | |
| 7.7 | | .25 | 0.35 | | | | | | |
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| Notes / Comments | • | ; | | | | | | | |
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| | | | Corresponding Comment | Number(s): | | | | | |

DOC NO. TWR-64222 VOL

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-12 Nozzle Subassembly Phenolic Bondline Condition

| | | | , | | | | | |
|--------------------------------------|---------------------------------------|----------------|-------------|---------------|-------------------|-----------------|--------------------------|-------------|
| Motor No.: 360L029 | | | ft (A) | | C | Date: 2 - - " | 13 | |
| Assessment Engineer(s)/Ins | pector(s): | M.C | arla | L. Ta | Mers | | • | |
| Phenolic Subassembly: No | se Cap | | | 11 | | | | |
| Record Primary Bondline/Ph | nenolic Fai | lure Mode | Percenta | ge (After Hy | ydrolase | and Wedge | e Removal): | |
| | | | | Degree L | ocation | | | |
| | 515-45 | 42-135 | ニュス・シュス | <u> </u> | | | TOTAL | |
| ★ Metal-to-Adhesive | _3_ | a | , | 1' | | | 2 | |
| Within Adhesive | | | | | | | | |
| Adhesive-to-GCP | | | | | | | | |
| Within GCP | | | 1 | | | | | |
| GCP-to-CCP | 16 | 07 | 97 | 98 | | | 97 | |
| Within CCP | | | • • | | | | | |
| CRISINGO INSTANCE | | ^ | | | | <u> </u> | | |
| POOR QUALITY | W CACT | U.C. | : \ | | | | | |
| Within CCP OF POOR QUALITY Bondline | Failure M | lode Perce | entage (Af | ter Remova | l of Rem | aining Phe | nolics): | |
| · | | | | Degree L | _ocation | | | |
| | 315.45 | 45-135 | 125-225 | 2555 | ; | | TOTAL | |
| Metal-to-Adhesive | 30 | 40 | 25 | 20 | : | | 129 | |
| Within Adhesive | | | | | | | | |
| Adhesive-to-GCP | 10 | 60 | 75 | 30 | | | 71 | |
| | | 111- | ٠, | , , | 1 | | | |
| Phenolic Removal N | Method: 💆 | Medy | ُ کُنْ | ranc; | pec! | | | |
| Metal Housing Bondline Sur | -fana Ohaa | | | | · | | | |
| A. Soot? | Hace Obse | ervations; | | | Yes | i N | Comment | F |
| B. Voids in Adhesive? | | | | | | 7 = | | |
| C. Corrosion? D. Foreign Material? | | | | | | _ | | _ |
| | | | · | | | | | |
| Notes / Comments | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | rester Carr | tion. | 0.5"dic | ancete etal-to | v four | d consciolant on some | |
| Special Issue 3.3.3 | 6-01/100 B | o" ad | aft 3. | 0-4.0 | | - CO () () | separations or | |
| Marion of INT for | ، رسط | | | 11. | ~ \ | | | |
| Special Issue 3.3.11 | voids | preater | - المرب | 0.30(+ | round | - چرت | Frage C-1 | 1+1 |
| No | repai | - 000 | الحد د الما | irved | ci c n | c - " - 1 1 - C | X = 10 01 | |
| iminary PFAR(s)? | Yes | N | o Pro | eliminary Pf | FAR Num | ber(s): | 0 54C-01 | |
| Clarification Form(s)? | Yes | N | o Cla | arification F | orm Pag | e No.(s): | C-MH | |
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Nozzle Subassembly Bondline Adhesive Void Clarification Form

| , , , , , , , , , , , , , , , , , , , | | 57 | | 0 1 1= | | | |
|---------------------------------------|---------------------------------------|---------------------|-------------------------|--|--|--|--|
| Motor No.: 360L029 | | | 2 - 1 | 2-1-13 | | | |
| Assessment Enginee | | (s): V . | lark, K. Tellers | | | | |
| Nozzie Subassembly: | Nose | -Cap | · | | | | |
| Record Bondline Adh | nesive Void Mo | / easurements an | d Locations Below: | L | | | |
| Degree | Void | Size | Location on Bo | n Bonding Surface | | | |
| Location | Axial | Circ. | Distance From Fwd | Distance From Aft | | | |
| 74.5 | 10 | ٥٤. | | 1,25 | | | |
| 7/1 | | .15 | 4.80 | | | | |
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| Notes / Comments | | | | | | | |
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| | | | | OF ROOM PROPERTY | | | |
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| | | | Corresponding Comment N | lumber(s): | | | |
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POSTFLIGHT OBSERVATION RECORD (PFOR) C-12 Nozzle Subassembly Phenolic Bondline Condition

| Motor No.: 360L029 | Side | E Left (A) | Bondline Co | | 120 | 3 -> |
|--|-----------------|----------------------|---------------------------------------|----------------|---------------------|---------------------------------------|
| Assessment Engineer(s)/Insp | | WILKES / | | | 1-28- | |
| Phenolic Subassembly: Co | | W/2/ce 5 / | ELLET | <u> </u> | | |
| Record Primary Bondline/Ph | enolic Failure | Mode Percentage // | \ftar blories | | 1 1 5 | |
| | | | egree Locati | | reage Hen | novai); |
| ļ. | 0-301 | | aBlee Focsti | ion | 1 | t i |
| Metal-to-Adhesive | 99 | | | | | |
| Within Adhesive | | | | | | |
| Adhesive-to-SCP | / * | | | | | |
| Within SCP | | | | | | |
| <u> </u> | | | | | | |
| SCP-to-CCP | | | | | | |
| Within CCP | | | | | | |
| * Arous | EDRIUK E | 2141 | | | | |
| | | • | | | | |
| Record Secondary Bondline | Failure Mode | Percentage (After Re | emoval of R | emaining | Phenolics |): |
| Mr. | | De | gree Locati | on | | |
| | | | | 1 | 1 | 1 1 |
| Metal-to-Adhesive | | | | | | |
| Within Adhesive | | | | | | |
| Adhesive-to-SCP | | | | - | | |
| Phenolic Removal Me | | | · · · · · · · · · · · · · · · · · · · | | _ | |
| THEODIC Removal Mi | etnoa: | | | | | |
| Metal Housing Bondline Surfa | ace Observation | ons: | | /es | A1- | |
| A. Soot? | | | , | • | No | Comment # |
| B. Voids in Adhesive? C. Corrosion? | | CRINING | | | | / |
| D. Foreign Material? | | OF POOR QUAL | E /s — | <u> </u> | | 2 |
| | | *OML | my — | . | | |
| Notes / Comments D SEE | - PFOR CL | ARIFICATION I | FORM PA | CE C | -20A E | B. |
| 02 8012 176.012 M. AC | OF 126 C | ORKUSIEM THROM | COUT L | ENGTH | E C'RCI | CONTRACT. |
| Special Issue 3.3.11 | WERE OF | SETVED ON CO | WL HOUS | 116 | | |
| ST PK - F C-20 A E B | FOR VOID | S FOR STANK | ~73.7 4/4/ | . | U> 1.50 | 47 |
| HOUSE THON FURTHER | EXIL CHAPTY | 10 ADE AT 232 | - 3/0° AN S | 16 071 | TO PORTO | |
| ************************************** | _ Yes | | ary PFAR Nu | | 2 778 155 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| | | | Y FEAR NU | oer(\$): | | |
| Clarification Form(s)? | _ Yes | No Clarificat | ion Form Pa | age No.(s |): <u> </u> | PA, B |
| | | | | | | · |
| PENSION | | | DOC NO T | WP_6422 | | |

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PAGE C 30



REVISION ____

Nozzle Subassembly Bondline Adhesive Void Clarification Form

| Secondary Engineer | Motor No.: 360L029 | | eft (A) Right (B) Da | ite: 1-28-93 | | | | |
|---------------------|--------------------|-----------------|-----------------------------|-------------------|--|--|--|--|
| reseasment Engineer | r(s)/inspector(| (s): WILKES | S / TELLERS | | | | | |
| lozzie Subassembly: | COWL | | | | | | | |
| Record Bondline Adh | resive Void Me | aasurements and | Locations Below: | | | | | |
| Degree | Void | Size | Location on Bonding Surface | | | | | |
| Location | Axial | Circ. | Distance From Fwd | Distance From Aft | | | | |
| <u> </u> | 0.30 | 0.10 | 1.65 | | | | | |
| 158 | 0.30 | 0.15 | 2.20 | * | | | | |
|) / / | 0.10 | 0,55 | 0.35 | | | | | |
| 162-167 | 0.30 | 3.45 | 0,00 | | | | | |
| 164 | 0.30 | 0.15 | 1.10 | | | | | |
| 147 | 0.40 | 0.15 | 1.10 | | | | | |
| 167.2 | 0.30 | 0.15 | 1,20 | | | | | |
| 761. | .30 | ,10 | 2,45 | | | | | |
| ;73 | ,40 | .10 | 0,00 | | | | | |
| 77.5 | ,40 | .10 | 0,00 | | | | | |
| 175-165 | .25 | 1.50 | 40 | | | | | |
| 174 | ,45 | .10 | 0,00 | | | | | |
| 177 | ,30 | .20 | 1,65 | | | | | |
| | | | | | | | | |

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Nozzle Subassembly Bondline Adhesive Void Clarification Form

| Motor No.: 360L029 | | Side: D Le | eft (A) Right (B) Date | : 1-28-93 | | |
|---------------------|----------------|-----------------|------------------------|-------------------|--|--|
| Assessment Engineer | r(s)/Inspector | (s): WILKE | S/TELLEYS | | | |
| lozzie Subassembly: | COW | | | | | |
| Record Bondline Adh | esive Void M | easurements and | Locations Below: | | | |
| Degree | Voic | i Size | Location on E | Bonding Surface | | |
| Location | Axial | Circ. | Distance From Fwd | Distance From Aft | | |
| <u> 18/</u> | .30 | 10 | <u>. 95</u> | | | |
| 1P 2-183 | .45 | 1.20 | 2.20 | | | |
| 24 | .30 | .25 | 1,95 | | | |
| 186 | _,30 | .30 | 1,95 | | | |
| IEE | , 35 | .20 | 1.65 | | | |
| 192 | ,35 | .05 | 0,10 | | | |
| 193-124 | .20 | 1.10 | .25 | | | |
| 190 201 | .30 | 2.0 | ,20 | | | |
| 20/00 | ,25 | .70 | 0.00 | | | |
| 20' | .45 | .20 | 0,50 | | | |
| 7.71 | 0.10 | .35 | 3.00 | | | |
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| otes / Comments | | | | | | |
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SPACE OPERATIONS

POSTFLIGHT OBSERVATION RECORD (PFOR) C-12 Nozzle Subassembly Phenolic Bondline Condition

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| Nozzie Subassembly Phenolic Bondline Condition | | | | | | | | | | |
|---|---------------|-----------|------------|--------------|----------------|-------------|---------------------------------------|---|---------|--|
| Motor No.: 360L029 | | Side: Le | eft (A) | | | Date: Z | FEB 9. | 3 | | |
| Assessment Engineer(s)/Inspector(s): P. Quick T. FRESTON | | | | | | | | | | |
| Phenolic Subassembly: Fixed Housing Assembly | | | | | | | | | | |
| Record Primary Bondline/P | henolic Fai | lure Mode | Percenta | ge (After | Hydrolase | and Wedg | ge Remov | ai): | | |
| Degree Location | | | | | | | | | | |
| •• • • • • • • | 0-45 | 45.90 | 90-135 | 135-180 | 180-225 | 225-270 | 270-315 | 315-0 |] | |
| Metal-to-Adhesive | 50% | 97% | 30% | 90% | 70% | 98% | 100% | 100% | (1) | |
| Within Adhesive | | | | | | | | | | |
| Adhesive-to-GCP | | | | | | | | | | |
| Within GCP | | | | | | | | | | |
| GCP-to-CCP | 50% | 3% | 70% | 10% | 30% | 2% | 0% | 0% | | |
| Within CCP | | | | | | | | | ĺ | |
| | | | | | | • | * | | ı | |
| B | | | | | | | | | | |
| Record Secondary Bondline | Failure M | ode Perce | entage (Af | ter Remov | al of Rem | aining Phe | enolics): | | | |
| | | · | | Degree | Location | | | | | |
| | 0-360 | | | | | | | | | |
| Metal-to-Adhesive | · | | | | | | | | | |
| Within Adhesive | | | | | | | | | | |
| Adhesive-to-GCP | 100% | | | | | | | | | |
| | | _ | | | | | | | _ | |
| Phenolic Removal N | /lethod: _ | | | <u></u> | | | · · · · · · · · · · · · · · · · · · · | | | |
| Motel Heusing Bandtin C | | | | | | <u> </u> | > | | | |
| Metal Housing Bondline Sur A. Soot? | tace Obse | rvations: | | | Yes | , N | lo (| Comment | # | |
| B. Voids in Adhesive? | | | | | \overline{V} | | <u> </u> | EE PGC | 7/1 | |
| C. Corrosion? | | | | | | | \overline{z} | | <u></u> | |
| D. Foreign Material? | | | | | | / | | | | |
| Notes I Comments 1-80% ADHESIVE TO METAL FAILURE OVER ENTIRE BONDLINE | | | | | | | | | | |
| , | , - , - , - , | | | | | | | -,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | , | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | / | | | | | | | | | |
| minary PFAR(s)? | Yes | N | o Pre | eliminary F | PFAR Num | ber(s): | 54C- | 02 | | |
| Clarification Form(s)? | / Yes | N | | | | | | | | |
| | 1 88 | N | U Cis | irincation i | rorm Page | • No.(s): _ | <u> </u> | <i>/ H</i> | | |
| | | | | DOC | NO TW | R-64222 | lva | | | |
| REVISION | | | | SEC | 140. I W | R-04222 | VOL C-21 | | | |
| | | | | | | ı | ~ +1 | | | |



REVISION ____

Nozzle Subassembly Bondline Adhesive Void Clarification Form

| Motor No.: 360L029 | | Side: 🔀 Left | (A) Right (B) Date | . 2 5 | | |
|--|------------------|--------------|-------------------------|----------------------------------|--|--|
| Assessment Engineer | r(s)/inspector(s | | | 2 FeB 93 | | |
| Nozzie Subassembly: FIXED HOUSING ASSEMBLY | | | | | | |
| Record Bondline Adh | | | | | | |
| Degree | Void | | | andlan Ouds a | | |
| Location | Axial | Circ. | Distance From Fwd | onding Surface Distance From Aft | | |
| 104 | .48 | 28_overall.s | 5 <u>4.75</u> | | | |
| <u>257</u> | 1.42 | <u>.3</u> J | | 11.45 | | |
| 260 | .40 | .53 | | 5.62 | | |
| <u>280 </u> | 96_ | .20 | | 4.85 | | |
| 295 | 47_ | .25 | | 14.10 | | |
| 65 | <u>.53</u> | <u>.35</u> | | 8110 | | |
| <u>98</u> | <u>.97</u> | .40 | | 1.05 | | |
| 101 | 1.10 | 27_ | | 1.80 | | |
| 120 | | .50 | | 1.70 | | |
| | | | | | | |
| | | | | · | | |
| | | | | | | |
| | | ************ | | · | | |
| Notes / Comments | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| N | | | | | | |
| | | | Corresponding Comment I | Number(s): | | |

DOC NO.



POSTFLIGHT OBSERVATION RECORD (PFOR) C-13 Cowl Ring Phenolic (CCP) Section Condition

| Cowl Ring Phenolic (CCP) Section Condition | | | | | | | | | |
|---|-----------------------------|------------|--------------|------------|-------------|-------------|---------|----------------|--|
| | 60L029 | | Side: Left | (A) | | Date: | 5-17- | 93 | |
| Assessment Eng Cowl Phenolic S A. Cross-ph B. Ply liftin | Section Obs y cracking i | ervations: | terial? | <u>('</u> | | 'es - | No / r | Comment # | |
| Record the Cow | vi Char and | Erosion Me | asurements E | Below: | | | | | |
| Station | | | | | 18 | 0° | 270° | | |
| Location | Erosion | Char | Erosion | Char | Erosion | Char | Erosio | | |
| 0.3 | <u> </u> | .56 | 126 | 57 | .30 | <u>.</u> 52 | . 27 | .5, | |
| 1.0 | | _54_ | <u>, 20</u> | .55 | 35 | <u>.53</u> | .55 | | |
| 2.0 | . 4/,00 | .56 | .27 | ,58 | .38 | .54 | .57 | | |
| 3.0 | . 4/- | .6- | .32 | .63 | . 35 | .63 | .55 | .61 | |
| 4.0 | <u>.42</u> | .60 | 12- | .61 | .35 | .66 | | .57 | |
| 5.0 | .444 | .62 | - 5 | .70 | .36 | .68 | | . 6 | |
| 6.0 | | ,10 | ,22 | .74 | .25 | . 79 | .55 | - . | |
| 6.8 | 0.32 | 0.73 | 0.24 | 0.83 | NA | NA | NA | NA | |
| Negative Ma | | ety? | Yes _ | No | Station | n: | Degree |): | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | · | | | | | | 0- | | |
| | | | Λ | | | | OF PC | POR QUALITY | |
| iminary PFAI | R(s)? | Yes | No | Prelimin | ary PFAR Nu | mber(s): | | YUNLITY | |
| rication Form | m(s)? | Yes | No | Clarificat | ion Form Pa | ge No.(s) | : | | |
| REVISION | | | | | DOC NO. T | WR-6422 | 2 vo. | | |

SEC

PAGE C-22



POSTFLIGHT OBSERVATION RECORD (PFOR) C-14 Forward Exit Cone Phenolic (CCP) Section Condition

| Motor No.: 360 | L029 | | Side: Left | (A) | | Date: / | 6-10-9 | <u> </u> |
|---|----------------|---------------|------------|------------|-------------|------------|---------------|-----------|
| Assessment Eng | ineer(s)/ins | spector(s): | | | - | 7 50.0. 2 | D 10-1 | 5 |
| Forward Exit Cone Phenolic Section Observations: A. Cross-ply cracking in virgin material? B. Ply lifting? Record the Forward Exit Cone Char and Erosion Measurement | | | | | | /es | No / | Comment # |
| Station | 0 | • | 9 | 0° | 1.9 | 80° | | 270° |
| Location | Erosion | Char | Erosion | Char | Erosion | Char | Erosio | |
| 1.0 | .39 | .65 | <u>.40</u> | .63 | .44 | .65 | .41 | .66 |
| 4.0 | .42 | .65 | .41 | .62 | .40 | .63 | .39 | |
| 4.6 | <u>. 39</u> | .67 | . 37 | .64 | -40 | .64 | .43 | .67 |
| 8.0 | .37 | .68 | .32 | .66 | .39 | .63 | ,32 | 77 |
| 12.0 | NA | AU | NA | AU | J. H | AN | NA | HA |
| 16.0 | <u> </u> | | | <u> </u> | | 1 | 1 | |
| 20.0 | | | | | | | | |
| 24.0 | | | | | AX | HY | AM | AIA |
| 28.0 | | ! | NA | NA | .24 | .64 | .24 | .69 |
| 32.0 | | | .22 | .65 | .25 | .56 | -19 | .70 |
| 32.9 | | 4 | .22 | .61 | .19 | .62 | .15 | .75 |
| 34.0 | 11A | NA | .17 | .62 | .11 | .69 | .16 | .70 |
| Negative Mar | gin of Safe | ety? | Yes | V No | Station | n: | Degree | »: |
| Notes / Comment | ts | | | | | | | |
| | Oite | in the second | | | | | | |
| | · COM | ANUTAL | | | | | | |
| P 'iminary PFAR | (s)? | Yes | No | Prelimina | ary PFAR Nu | ımber(s): | | |
| C rication Form | ı(s)? <u>v</u> | Yes | No | Clarificat | ion Form Pa | age No.(s) | : <u>C-23</u> | A, C-23B |
| REVISION | _ | | | | DOC NO. T | WR-6422 | 2 VOL | · |



POSTFLIGHT OBSERVATION RECORD (PFOR) C-19 Forward Exit Cone Phenolic (CCP) Section Condition

| | | | xit Cone Phe | | | ndition | | |
|---|---------------|-------------|--------------|-------------|---------------|-----------|------------|---------------|
| | OL029 | | Side: | LEFT | - (A) | Date: | 4-9- | 93 |
| Assessment En | gineer(s)/Ins | pector(s): | L.E W | ILKES | | | | |
| AFT Exit Co A. Cross-ph B. Ply liftin | y cracking i | | | | Y | es | No / | Comment # |
| Record the Fon | ward Exit Co | ne Char and | d Erosion Me | asurements | Below: | | | |
| Station | 270 | | 26 | | | 0 | . - | 3 <i>00</i> ° |
| Location | Erosion | Char | Erosion | Char | ニッ Erosion | Char | Erosion | |
| 118.77 | NA | NA | NA | NA | NA | | NA | |
| 113.77 | .170 | .590 | .170 | ,540 | | .570 | | |
| 107.77 | .150 | .580 | .170 | .520 | | ,560 | | |
| 101.77 | .160 | .570 | ,170 | . 550 | | ,540 | .140 | - |
| 95. 77 | .130 | .520 | NA | NA | | MA | MA | 177 |
| 89.77 | NA | NA | | | | | | - |
| 83.77 | | | | | | | | |
| 77.77 | | | | | | | | - |
| 73.77 | $\sqrt{}$ | | <u></u> | 1 | | | 1 | |
| Negative Ma | · | oty? | Yes | No. | Station | ; | Degree: | |
| Notes / Comme | nts | | | | | | | |
| | | | | | | | | |
| P -liminary PFA | R(s)? | Yes _ | No | Prelimina | ry PFAR Nu | mber(s): | | |
| ification For | m(s)? | Yes _ | No No | Clarificati | on Form Pa | ge No.(s) | : | |
| REVISION _ | | | | | DOC NO. T | WR-64222 | VOL | |

POSTFLIGHT OBSERVATION RECORD (PFOR) C-19 Forward Exit Cone Phenolic (CCP) Section Condition

| | | | Exit Cone Phe | | | | | |
|---|--------------|------------|---------------|-------------|-------------|----------|-------------|---------------|
| | L029 | | Side: | | FT(A) | Date: | 4-9-9 | 3 |
| Assessment Eng | ineer(s)/lns | pector(s): | L.E. W | ルドミ | | | | |
| AFT Exit Con A. Cross-ply B. Ply lifting Record the Forw | cracking ir | ı virgin m | aterial? | asurements | *** | /es - | No ! | Comment # |
| Station | 3/ | 00 | | | | | | |
| Location | Erosion | Char | Erosion | Char | Erosion | Char | Erosion | Char |
| 118.77 | 11/4 | NA | | | | | | |
| 113.77 | ,240 | ,570 | | | | | | · |
| 107.77 | ,130 | .670 | | | | | | • |
| 101.77 | ,130 | .610 | | | | | | |
| 9 <i>5</i> .77 | 11 14 | 1/F | | | | | - | |
| 89.77 | | | | | | | | - |
| 83.77 | | | | | | | - | |
| 77.77 | | 1 | | | | | | |
| <i>73.</i> 7 7 | | | | | | | | |
| Negative Ma | rgin of Safe | ity? | Yes | No | Station | n: | Degree: | |
| Notes / Commen | its | | | | | | | |
| P diminary PFAR | | Yes | No | | ary PFAR Nu | | | |
| ification Form | | Yes | No | Clarificat | DOC NO. T | TWR-6422 | | |



POSTFLIGHT OBSERVATION RECORD (PFOR) C-15

| | Fixed Housing Phenolic (CCP) Section Condition | | | | | | | | |
|------------------|---|--------------|---------------|------------|-------------|---------------|--------------------------|---------------|--|
| Motor No.: 36 | 0L029 | | Side: Left | (A) | | Date: | 6-10-9 | 3 | |
| Assessment Eng | Assessment Engineer(s)/Inspector(s): M. Clark | | | | | | | | |
| Fixed Housing P | | | | | • | Yes | No | Comment # | |
| A. Cross-pl | | n virgin ma | terial? | | | . | | | |
| o. Fly litting | g r | | | | - | . | | | |
| Record the Fixe | Record the Fixed Housing Char and Erosion Measurements Below: | | | | | | | | |
| Station | 0 | • | 90 | 0° | 18 | 180° 27 | | 270° | |
| Location | Erosion | Char | Erosion | Char | Erosion | Char | Erosio | | |
| 0.0 | 0 | <u> 1.13</u> | ,14 | 1.30 | .07 | 1.42 | _[_ | 1.19 | |
| 1.0 | <u> </u> | -14 | .07 | 1.62 | 80. | 1.01 | | .91 | |
| 2.0 | | .35 | | .70 | .67 | .37 | \overline{C} | 1.06 | |
| 3.0 | | <u>.83</u> | | 165 | -C7 | .87 | 0 | 1.01 | |
| 4.0 | | 78 | \mathcal{C} | 163 | .09 | .90 | | .97 | |
| 5.0 | | 187 | | .64 | 108 | :24 | <u> </u> | 93 | |
| 6.0 | | 188 | | .60 | 04 | .36 | | 96 | |
| 7.0 | | 90 | <u> </u> | 155 | | 88. | $\overline{\mathcal{C}}$ | | |
| 8.0 | | <u> </u> | | ,45 | 5 | .83 | | 72 | |
| 9.0 | | 1.63 | 7 | .64 | | .90 | \overline{c} | - | |
| 10.75 | | 1.91 | <u>C</u> | 1.66 | .15 | 1.77 | C | 1.92 | |
| | | | | / | | | | | |
| Negative Ma | rgin of Safe | ety? | Yes | No | Station | n: | Degree |): | |
| Notes / Commer | nts | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | t. Cin | U | | |
| F limite - pers | 24.10 | | | | | • 35 | POOR QU | BE IS | |
| 'minary PFAF | H(S)7 | Yes _ | No | Prelimina | ary PFAR Nu | umber(s): | | MLITY | |
| C .rication Forr | m(s)? | Yes | No | Clarificat | ion Form P | age No.(s |): | | |
| | | | | | | | | | |
| REVISION _ | | | | | DOC NO. | ΓWR-6422 | | | |
| _ ·-·-· | | | | | SEC | | PAGE C-24 | • | |



POSTFLIGHT OBSERVATION RECORD (PFOR) C-16 Throat inlet Assembly Phenolic (CCP) Section Condition

| Manage No. 26 | Thioat linet Assembly Phenolic (CCP) Section Condition | | | | | | | |
|--|--|-----------------------------|----------------------|------------------|--|--|--|--|
| | 60L029 gineer(s)/Inspector(s | Side: Left (A) | Date: 3/3/93 | | | | | |
| Assessment En | Ameer (2)\u00e4usbector(2 |): Jim PASSMAN, | CARRY WILLS | | | | | |
| | Throat Inlet Assembly Phenolic Section Observations: Yes No Comment # | | | | | | | |
| | A. Cross-ply cracking in virgin material? B. Ply lifting? | | | | | | | |
| J. Ply Intill | A | | | | | | | |
| Record the Thr | oat Inlet Ring and Th | nroat Ring Char and Erosion | n Measurements Below | : | | | | |
| Station | Station 0° 90° | | 180° | 270° | | | | |
| Location | Erosion Char | Erosion Char | Erosion Char | Erosion Char | | | | |
| 1.0 | 1.09 0.5 | 9 1.08 0.59 | 1.06 0.47 | 1.06 0.58 | | | | |
| 2.0 | 1.14 0.5 | 7 1.09 0.58 | 1.09 0.54 | 1.09 0.59 | | | | |
| 4.0 | 1.17 0.60 | 1.14 0.62 | 1.16 0.57 | 1.16 0.57 | | | | |
| 6.0 | 1.21 0.67 | | 1.19 0.62 | | | | | |
| 8.0 | 1.29 0.56 | | 1.26 0.47 | 1.28 0.51 | | | | |
| 10.0 | 1.24 0.5. | | 1.21 0.48 | 1.21 0.54 | | | | |
| 12.0 | 1.20 0.57 | | 1.18 0.54 | 1.18 0.59 | | | | |
| 14.0 | 1,20 0.5 | | 1.17 0.53 | 1.18 0.51 | | | | |
| 16.0 | 1.14 0.57 | | 1.06 0.57 | | | | | |
| 18.0 | 0.99 0.56 | | 0.9Z 0.66 | 1 30 | | | | |
| 20.0 | 0.77 0.62 | | 0.76 0.61 | 0.78 <u>0.62</u> | | | | |
| 22.0 | 0.57 0.7 | | 0.53 0.77 | | | | | |
| 23.0 | 0.45 0.77 | | 0.43 0.71 | | | | | |
| 25.0 | | <u> </u> | 0,75 | 0.48 0.66 | | | | |
| Negative M | argin of Safety? | Yes No | Station: | Degree: | | | | |
| Notes / Comme | ent s | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| <u> </u> | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| No Preliminary PFAR(s)?YesNo Preliminary PFAR Number(s): | | | | | | | | |
| fication Form(s)?YesNo Clarification Form Page No.(s): | | | | | | | | |
| | | | | 1 | | | | |
| REVISION | | | DOC NO. TW R-64222 | VOL GE | | | | |

REVISION ____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-17 Nose Cap Phenolic (CCP) Section Condition

| Station | Motor No.: 36 | 0L029 | T | Side: Left (| | ion Condition | Date: | 3/3/93 | 2 |
|--|--|---------------|------|--------------|-------------|---------------|-------|----------|-------------|
| Nose Cap Phenolic Section Observations: Yes No Comment # | Assessment Eng | gineer(s)/Ins | | <u>`</u> | | AZICI WILL | 1 | <u> </u> | 2 |
| Station 0° 90° 180° 270° Location Erosion Char Erosion Char Erosion Char Erosion Char 1.5 NA | A. Cross-ply cracking in virgin material? B. Ply lifting? | | | | | | | | |
| Location Erosion Char Char Prosion Char Erosion Char Prosion Char Char Prosion Char Prosion Char Erosion Char Prosion Char Char Prosion Char Erosion Char Prosion Char Char Prosion Char Erosion Char Char Prosion Char All Pros | | | | | | 180 | ١٥ | • | 700 |
| 1.5 NA NA NA NA NA NA NA NA | Location | _ | | | | | | | |
| 4.0 0.42 0.48 0.34 0.56 0.32 0.54 0.39 0.52 6.0 0.41 0.53 0.35 0.55 0.32 0.52 0.41 0.51 8.0 0.47 0.56 0.42 0.50 0.39 0.53 0.43 0.51 10.0 0.49 0.54 0.44 0.46 0.47 0.55 0.47 0.47 12.0 0.59 0.52 0.47 0.49 0.57 0.49 0.55 0.49 14.0 0.67 0.45 0.49 0.49 0.53 0.47 0.59 0.42 16.0 0.76 0.47 0.60 0.47 0.63 0.45 0.70 0.42 18.0 0.94 0.52 0.74 0.36 0.81 0.47 0.88 0.50 20.0 0.23 0.50 0.64 0.63 0.63 0.65 0.67 0.69 22.0 0.69 0.70 0.69 0.70 0.69 0.70 0.69 0.70 0.69 0.70 0.69 0.70 0.69 0.70 0.69 0.70 $0.$ | 1.5 | NA | NA | NA | NA | NA | NA | | |
| 6.0 | 4.0 | 0.42 | 0.48 | 0-34 | 0.56 | 0.32 | 0.54 | | |
| 8.0 | 6.0 | 0.41 | 0.53 | 0.35 | | 0.32 | 0.5Z | | |
| 10.0 0.49 0.54 0.44 0.46 0.47 0.55 0.47 0.47 12.0 0.59 0.52 0.47 0.49 0.57 0.49 0.55 0.46 14.0 0.67 0.45 0.49 0.48 0.53 0.47 0.59 0.43 18.0 0.76 0.47 0.60 0.47 0.63 0.45 0.70 0.42 18.0 0.94 0.52 0.74 0.36 $0.8]$ 0.47 0.88 0.50 20.0 1.23 0.50 1.08 0.33 0.99 0.45 1.07 0.49 22.0 1.78 0.64 1.54 0.63 1.37 0.61 1.61 0.74 24.0 1.92 0.67 1.68 0.71 1.54 0.72 1.83 0.65 26.0 1.36 0.64 1.78 0.74 1.08 0.76 1.29 0.70 Negative Margin of Safety? Yes 1.80 No Station: Degree: | 8.0 | 0.47 | 0.56 | 0.42 | 0.50 | 0.39 | 0,53 | 0,43 | |
| 12.0 | 10.0 | 0.49 | 0,54 | 0.44 | 0.46 | 0.41 | | | |
| 14.0 | 12.0 | 0.59 | 0.52 | 0.47 | 0.49 | 0.51 | 0.49 | 0.55 | |
| 16.0 | 14.0 | 0.67 | 0.45 | 0.49 | 0.48 | 0.53 | 0.47 | | |
| 18.0 | 16.0 | 0.76 | 0.47 | 0,60 | 0.47 | 0.63 | 0.45 | | |
| 20.0 1.23 0.50 1.08 0.33 0.99 0.45 1.57 0.49 22.0 1.78 0.64 1.54 0.63 1.37 0.61 1.61 0.74 24.0 1.92 0.67 1.68 0.71 1.54 0.72 1.83 0.65 26.0 1.36 0.64 1.18 0.74 1.08 0.76 1.29 3.70 Negative Margin of Safety? Yes No Station: Degree: | 18.0 | 0.94 | 0.52 | 0.74 | 0.36 | 0.8] | 0.47 | 0,8 | |
| 24.0 1.92 0.67 1.68 0.71 1.54 0.72 1.83 0.65 26.0 1.36 0.64 1.18 0.74 1.08 0.76 1.29 5.70 Negative Margin of Safety? Yes No Station: Degree: | 20.0 | 1,23 | 0.50 | 1.08 | 0.33 | 0.99 | 0.45 | 1.07 | |
| 26.0 <u>/.36 </u> | 22.0 | 1.78 | 0.64 | 1.54 | 0.63 | 1.37 | 0.61 | 1.61 | 0.74 |
| Negative Margin of Safety? Yes No Station: Degree: | 24.0 | 1.92 | 0.67 | 1.68 | 0.7/ | 1.54 | 0.72 | 1.83 | 0.65 |
| | 26.0 | 1.36 | 0.64 | 1.18 | 0.74 | 1.08 | 0.76 | 1.29 | 5.70 |
| Notes / Comments | Negative Margin of Safety? Yes No Station: Degree: | | | | | | | | |
| | Notes / Comme | nts | | | | | | • | |
| Proliminary PFAR(s)? Yes No Preliminary PFAR Number(s): | | | | | | | | | |
| rication Form(s)? Yes No Clarification Form Page No.(s): | | | | | | | | | |

DOC NO. TWR-64222 VOL

SEC

PAGE C-26



REVISION ____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-18

| | Forward Nose Ring and Aft Inlet Ring Phenolic (CCP) Section Condition | | | | | | | |
|---|---|-------------|--------------|---------------|------------|----------|-------------|---------------|
| Motor No.: 36 | 0L029 | | Side: Left | | | Date: | / / | |
| Assessment Eng | Assessment Engineer(s)/Inspector(s): Jim PASSMAN LARRY WIKS | | | | | | | |
| Forward Nose and Aft Inlet Ring Phenolic Section Observations: Yes No Comment # | | | | | | | | |
| A. Cross-ply | cracking in | n virgin ma | terial? | | | | | |
| B. Ply lifting | 3? | | | | | | | |
| Record the Fore | vard Nose R | ing (-503) | Char and Ere | osion Measure | ements Bei | ow: | | |
| Station | 0 | | | o° | 180 | | | 270° |
| Location | Erosion | Char | Erosion | Char | Erosion | Char | Erosio | |
| 28.0 | 1.15 | 0.68 | 1.07 | 0.68 | 1.04 | 0.74 | 1.18 | 3 0.65 |
| 30.0 | 0.94 | 0.69 | 0.91 | 0.78 | 0.87 | 0.69 | 0.96 | |
| 32.0 | 0.95 | 0.61 | 0.90 | 0.71 | 0.89 | 0.68 | | |
| | | | | | | | | |
| Negative Ma | irgin of Safe | ety? | Yes | No | Station | : | Degree | 9: |
| Record the Aft Inlet Ring Char (-504) and Erosion Measurements Below: | | | | | | | | |
| Station | 0 | | 90 |)° | 180 | ١٥ | | 270° |
| Location | Erosion | Char | Erosion | Char | Erosion | Char | Erosio | |
| 34.0 | 0.87 | 0.57 | 0.84 | 0.62 | 0.82 | 0.56 | 0.90 | 0.50 |
| 36.0 | 0.91 | 0.59 | 0.89 | 0.57 | 0.87 | 0.56 | 0.9 | |
| 38.0 | 0.98 | 0.64 | 0.95 | 0.57 | 0.94 | 0,53 | | |
| 39.0 | 1.04 | 0.66 | 0.98 | 0.63 | 0.96 | 0.62 | | |
| Negative Ma | rgin of Safe | ity? | Yes | ✓ No | Station | | Degree | - |
| Notes / Commen | nts | | | | | | | |
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| | | | | | | | | |
| Siminary PFAR(s)?YesNo Preliminary PFAR Number(s): | | | | | | | | |
| C fication Form | n(s)? | Yes | No | | n Form Pag | | | |
| | | | | | | | | |
| REVISION | | | | C | OC NO. T | WR-64222 | 2 | |

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-1 Nozzie Assembly Quick-look Condition

| Motor No.: 360L029 | Side: Right (B) | Date: | 25 73 |
|---|-------------------------------------|---------------|----------------------------------|
| Assessment Engineer(s)/Inspector(| s): C 21166 | | |
| Nozzle Assembly Quick-look Observable A. Metal Damage Due to Trans B. Phenolic Damage Due to Tr C. Foreign Material? | vations: sportation or Handling? | Yes | No Comment # |
| 10 1000 10 10 10 10 10 10 10 10 10 10 10 | LUMBER LEGIS OF CRAF MARKEN OF | CE FIXE" | 7 1454 |
| 7. 1916-81 - FESH 240 | - SC 57 | | |
| | | | |
| ninary PFAR(s)?Yes | No Preliminary PFA | .R Number(s): | ORIGINAL PAGE IS OF POOR QUALITY |
| Clarification Form(s)? Yes | No Clarification For | rm Page No.(s |): |
| REVISION | DOC NO. | TWR-6422 | 2 VOL |



POSTFLIGHT OBSERVATION RECORD (PFOR) C-2 Internal Nozzle Joint Condition

| Motor No.: 360L029 | Side: Right (B | 3) | Date: 1, = | 2, 25 |
|--|---|--|---------------------------------------|--------------------------|
| Assessment Engineer(s)/Inspe | ctor(s): E QUICE | T ECESTON | 7 - | <u> </u> |
| | ring-to-Cowl (Joint #2) | 1 1 1 2 2 3 1 3 1 4 | | |
| Internal Nozzle Joint Observati A. Gas Penetration in the B. RTV Not Below Char Li C. RTV To the Primary O- D. RTV Past the Primary O- E. Uncured RTV? F. Voids Within RTV? G. Foreign Material? H. Heat Affected or Erode I. Damaged Phenolics? J. Bondline Edge Separati K. Phenolics Axially Displa L. Heat Affected Metal? M. Unbonded or Blistered N. Corrosion? O. Excessive Grease in The P. Bolt Hole Damage (Thr | ons: RTV (Terminated, Throne? ring? O-ring? d Virgin CCP, GCP/SCP ons? Use Clarification ced From Housing? Paint? | ough)? On adhesive? Form. | Yes No | Comment # |
| Q. Bent or Broken Bolts? R. Metal Damage (Joints of | | _ | | |
| Notes / Comments | - · · · · · · · · · · · · · · · · · · · | | | |
| Special Issue 3.3.2-1.6 LE | ETV 97 3180,66. LISER- BURNED ON OIT CHUNG | ADSECTED SO BENBOARD OF HOLES 114 RTY ER OF COULT | FLOW SUM HEAT AF, HEG | EFLE EFFED CON 1991 E |
| 3-GAS PATH IN RTV I HSG RTV & EDWS B | 8/ 552°/NO 75 | ECHUNA SED LIF | CHPAIRE | R OF COUR |
| minary PFAR(s)? | Yes No | Or Or Preliminary PFAR Nu | RIGINAL PAG POOR QUAL umber(s): | E IS ITY |
| Clarification Form(s)? | Yes No | Clarification Form Pa | age No.(s): | |
| REVISION | | DOC NO. T | WR-64222 | VOL |

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SPACE OPERATIONS

POSTFLIGHT OBSERVATION RECORD (PFOR) C-3

Nose Inlet-to-Flex Bearing-to-Cowl Joint (Joint #2) Condition Drawing Worksheet

| Motor No.: 360L029 | Side: Right (B) | |
|--|---|---|
| Assessment Engineer(s)/Inspector(s) | 9 | Date: 1/23/93 |
| Sketch Observations Below (include | | |
| Glass Cloth Phenolic Nose Inlet Assembly Carbon Cloth Phenolic | Forward End Ring Silica Clot Phenolic Carbon Cloth Phenolic | |
| 1. ICT TO PEIMINEN O 1. 1250 PERU COVERAGE TYPICAL INTERMIXING LIVERNE SAMS | (3) INTERMI E 360° (4) LIGHT C OF COWL (5) INTERMI | Light OTTENT CORRESPON 360° CORROSION ON AFT EDGE HSG ID FLANGE OTTENT SMALL ARGANIST PAINT (360°) |
| revision | No Clarification Form | TWR-64222 VOL |

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REVISION ____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2 Internal Nozzle Joint Condition

| Motor No.: 360L029 | Side: Right (B) | Date: | 1/28/93 | |
|---|----------------------------------|------------|---------------|--|
| Assessment Engineer(s)/Inspector(| B): R. QUICK T. FRESTON | * | | ······································ |
| Joint: Nose Inlet-to-Throat (Joint | | | | |
| · · · | | | | |
| Internal Nozzie Joint Observations: | | Yes | No | Comment # |
| A. Gas Penetration in the RTV | (Terminated, Through)? | | | |
| B. RTV Not Below Char Line? | | | | |
| C. RTV To the Primary O-ring? | | | | |
| D. RTV Past the Primary O-ring | 1? | | _/ | |
| E. Uncured RTV? | | | | |
| F. Voids Within RTV? | | | | |
| G. Grease Inhibiting RTV Backf | ill? | | | |
| H. Foreign Material? | | | | |
| Heat Affected or Eroded Vir | gin CCP, GCP/SCP, or adhesive? | | | |
| J. Damaged Phenolics? | | - | | |
| K. Bondline Edge Separations? | | | | SEE PG C-3/4 |
| L. Phenolics Axially Displaced | From Housing? | | | |
| M. Heat Affected Metal? | | | | |
| N. Unbonded or Blistered Paint | | | | |
| O. Corrosion? | | | | |
| P. Alignment Pin Damage? | | NIA | | |
| Q. Excessive Grease in Thread | · - | | | |
| R. Bolt Hole Damage (Through | , Threaded/Helical Coil Insert)? | | | - |
| S. Bent or Broken Bolts? | | | | |
| T. Metal Damage (Joints or Ho | usings)? | | | |
| Notes / Comments | | | | |
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| minary PFAR(s)? Yes | No Preliminary PFA | R Numberis | i): | |
| • | | | | 211 |
| Clarification Form(s)? Yes | No Clarification For | m Page No. | (s): <u> </u> | 14 |
| | | | | |

TWR-64222

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DOC NO.

REVISION ____

Nozzle Interface Separation Clarification Form

| Motor No.: 360L029 | Side: Left (A) X Right (B) | Date: 1/28/93 |
|--|----------------------------|---|
| Assessment Engineer(s)/Inspector(| s): R. Quick T. FRESTON | , |
| Part: | forward End) | Cap (Aft End) (Forward End)* r Boot Ring (Forward End) E INLET FWD END |
| Interface Separation Types: | 1 | |
| A. Metal-to-Adhesive B. Within Adhesive C. Adhesive-to-GCP | E. GCP-to-CCP | G. Adhesive-to-SCP H. Within SCP H. SCP-to-CCP |
| Circumferential Location | Separation Type | Maximum Radial Width |
| * 0-360 * 30-38 * 130-140 | | .005 .005 .005 |
| - | | |
| | | |
| | | |
| | | * 1 |
| · | | |
| | | |
| | Corresponding Co | mment Number(s): |

DOC NO.



REVISION ____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-4 Nose Inlet-to-Throat Joint (Joint #3) Condition Drawing Worksheet

| Motor No.: 360L029 | Late Count (Count #3) Condition | |
|------------------------------------|---------------------------------|---------------------------|
| 1 | Side: Right (B) | Date: 1/28/93 |
| Assessment Engineer(s)/inspector(s | 1: R. Quick T. FRESTO | u |
| Sketch Observations Below (include | locations and sizes of sketche | d features): |
| | 1-TYPICAL SCALLOP | ED IN BETWEEN ROLF HOLES |
| 18 | Soot To PRIMARY | 0-RING 246-252 |
| 7-17 | 2 - GREASE COVERAG | 5 /s Nomiala |
| | | |
| | | |
| | | |
| | | Throat Assembly |
| | \ 6k \ | <i>\ \</i> |
| | | |
| | | |
| | | |
| Nose inlet Assembly | 4 | Carbon Cloth |
| | - C | Phenolic |
| | | |
| | 44 | |
|) | | |
| Carbon Cloth Phenolic | 1EN | Throat Housing |
| Glass Glass Br | | Glass Cloth Phenolic |
| Glass Cloth Phenolic | | |
| \setminus | | + - +- |
| Nose Inlet | | |
| Housing | (z) <u> </u> | |
| | | |
| | | |
| 3-NO EXCESS GREASE | IN BOLT 5- RTV | BELOW CHARLINE 360 |
| HOLES | 6-PLY S | EPARATION FROM 290 - 3000 |
| 4-RTV REACHED MINO | SEINLE GAP=,0 | 1/0 |
| HOUSING 360° EXCE | | |
| 4-A-20c 2950-3150 \$ 345 | -573 | |
| ification Form(s)?Yes | No Clarification | |
| 198 | <u> </u> | Form Page No.(s): |
| | | |



POSTFLIGHT OBSERVATION RECORD (PFOR) C-2 **Internal Nozzle Joint Condition**

| Motor No.: 360L029 | Side: Right (B) | Date: 1 20 | , 23 |
|---|---|--------------------------------|---------------------------------------|
| Assessment Engineer(s)/Inspector(s | DUICE | | |
| Joint: Throat-to-Forward Exit Cone | (Joint #4) | | |
| Internal Nozzle Joint Observations: A. Gas Penetration in the RTV B. RTV Not Below Char Line? C. RTV To the Primary O-ring? D. RTV Past the Primary O-ring E. Uncured RTV? F. Voids Within RTV? G. Grease Inhibiting RTV Backf H. Foreign Material? I. Heat Affected or Eroded Vir. J. Damaged Phenolics? K. Bondline Edge Separations? L. Phenolics Axially Displaced I. M. Heat Affected Metal? N. Unbonded or Blistered Paint O. Corrosion? P. Alignment Pin Damage? Q. Excessive Grease in Threads R. Bolt Hole Damage (Through S. Bent or Broken Bolts? T. Metal Damage (Joints or Ho | ill? gin CCP, GCP/SCP, or adhesive? Use Clarification Form. From Housing? ? ad Bolt Holes? , Threaded/Helical Coil Insert)? | Yes No | Comment # SEE RG 0:354 SEE RG 0:354 |
| Notes / Comments LIGAT TO DEFIUM JOL CORE DESCOTO MARCON | CONTRACTOR TOUR THIS | " 97-107° AT S LOSH NON. | SEAL REGION, |
| 2 MED IN TO HEAVY METINEEN PRIMAR FEMILIEO-205 AN | YE SECOKDARY G-RI | T END OF THRU ING SERL SURF | n - 4కచం *ఎట |
| iminary PFAR(s)?Yes | No Preliminary P | C PFAR Number(s): | POOR QUALITY |
| Clarification Form(s)? Yes | No Clarification | Form Page No.(s): | -33A |
| REVISION | DOC I | NO. TWR-64222 | уо <u>ь</u> 33 |

Nozzle Interface Separation Clarification Form

| Motor No.: 360L029 | Side: Left (A) 🔀 Right | (B) Date: 1/26/93 | | | |
|---|-----------------------------|------------------------------------|--|--|--|
| Assessment Engineer(s)/Inspector(| s): R.QUICK | | | | |
| Part: | | | | | |
| Interface Separation Types: | | | | | |
| A. Metal-to-Adhesive B. Within Adhesive | D. Within GCP E. GCP-to-CCP | *G. Adhesive-to-SCP *H. Within SCP | | | |
| C. Adhesive-to-GCP | F. Within CCP | *I. SCP-to-CCP | | | |
| Circumferential Location | Separation Type | Maximum Radial Width | | | |
| 20.300 | \mathcal{A}_{-} | . 2.205 | | | |
| 50 - 55° | <u></u> | 1.105 | | | |
| 1 2 2 2 3 | <u> </u> | 1.100 | | | |
| <u> </u> | <u>. A</u> | 003 | | | |
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| | Correspondin | a Comment Number(s): | | | |

DOC NO. TWR-64222 VOL

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-5 Throat-to-Forward Exit Cone Joint (Joint #4) Condition Drawing Worksh

| Motor No.: 360L029 | | oint #4) Condition Dra | |
|-------------------------------------|----------------------|---|----------------------------|
| Assessment Engineer(s)/Inspector(s) | | | Date: 1/26 ?? |
| | グラン・ファー | | |
| Sketch Observations Below (include | locations and size | | |
| | | _ | LOW CHAR LINE FULL |
| | | | FERENCE |
| | | シにして | 757,5°-545°= 55°-120° |
| | | _ | ATIONS ADHESIYE TO |
| | | | GEP TO SEP & MITHIN |
| | | GCP | |
| Throat Assem | ibly | - $ 0$ 1 | |
| | | | |
| | (b) | / | |
| Carbon Cloth | | <i></i> | Forward Exit Cone Assembly |
| Phenolic | 4 | |) |
| | | Z) Carb | on Cloth |
| Glass Cloth Phenolic | | Then the state of | lone / |
| Throat | | Glass Cloth | |
| Housing | $\overline{}$ | Phenolic | |
| | | | |
| | \overrightarrow{s} | Forward Ex Cone Hous | |
| | 2 Y | | |
| \ | | | |
| \mathcal{L} | <u></u> | | |
| | \ | | |
| | <i>= (2</i>) | PHEROLIC DIS | coupese |
| E'NO EXCESS GREAS | رط شد | LOOKS RUSTY | FROM 45 |
| 11 404 5 | ; | TO 188° | \vee |
| S JOHNANGE GREARS COL | igr4GE | | 1 |
| ON FLA CEES | | | 05. |
| | | | OF MINAL |
| fication Form(s)?Yes | No | Clarification Form Pag | OF POUR PAGE IS |
| | | | T/IX |
| REVISION | | DOC NO. TV | VR-64222 VOL |
| | | SEC | PAGE C-31 |

POSTFLIGHT OBSERVATION RECORD (PFOR) C-2 Internal Nozzle Joint Condition

| Motor No.: 3 | 360L029 | Side: Right (E | 3) | Date: 27 J | AN 1993 |
|--|---|---|--------------------|---|---------------|
| Assessment E | ngineer(s)/Inspector(s | 1): Jim PassonA | N, TREWOL FREST | | |
| Joint: Aft En | nd Ring-to-Fixed Housi | ng (Joint #5) | | | |
| A. Gas Pe B. RTV No C. RTV To D. RTV Po E. Uncure F. Voids V | Within RTV? n Material? Iffected or Eroded Virginal Phenolics? ne Edge Separations? lics Axially Displaced for Metal? ded or Blistered Paint | ? gin CCP, GCP/SC Use Clarification From Housing? ? ed Bolt Holes? , Threaded/Helics | P, or adhesive? | Yes No V V V V V V V V V V V V V | Comment # |
| 2 CARGE 140-1. 14.3" 3 Compos | PRIMARY O-RING AT UOID IN RTV CO ST. LARGE VOID IN RTV CO CIRC. SMAIL VOID IN AS NOTED ON SAR(s)?Yes | NO | Preliminary PFAR | 0.5" WIDE x 1.165°- 187°, 0.5 | 5"MAX WIDTH X |
| Clarification Fo | orm(s)? Yes | No | Clarification Form | Page No.(s): | |
| RE √ISION | · | | DOC NO. | TWR-64222 | VOL |

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REVISION ___

POSTFLIGHT OBSERVATION RECORD (PFOR) C-6 Aft End Ring-to-Fixed Housing Joint (Joint #5) Condition Drawing Worksheet

| Motor No.: 360L029 | | Side: | Right (B) | | Date: 27 | TAN 1993 |
|--|--------------------|----------|--------------|-------------------------------|-------------|--------------------------------------|
| Assessment Engineer | r(s)/inspector(s): | Jim | | TREWS FRESTO | N | |
| Sketch Observations MEDIUM (| Below (include I | ocations | and sizes of | sketched feature om /50°-0°-8 | s): O°. | D'EFFERMITEUT 360°. |
| | Aft End Ring | | | 3 45 Typ | LIGHT CORPA | Fixed Housing Inner Boot Ring (GCP) |
| Flexible Bearing Protector Typical Socials; LIGHT GREY, FROM C | | | | • Boot | | |
| ification Form(s) | ?Yes | | _No Cla | rification Form Pa | ge No.(s): | |
| | | | | | | |

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DOC NO.

REVISION _

POSTFLIGHT OBSERVATION RECORD (PFOR) C-7 Cowl Insulation Segment Condition

| Motor No.: 360L029 | Side: Left (A | A Ris47 (B) | Date: | 27/54 | 1/93 |
|------------------------|---------------------------|----------------------|------------|----------------|--------------|
| Assessment Engineer(s) | Inspector(s): PETE | MILLER, L. | WILK | E S | |
| B. Abnormal Heat El | Completely Through the Co | _ | Yes | No | Comment # |
| D. Bondline Failure I | Mode? Data Collection Onl | y | N/A | N/A | |
| Notes / Comments | Adhesive METal | Adhesive ses | reat | (OHe | sive seament |
| 1) 0-45 45-90 | 20 % 15 % | 60 % 5 5 70 | | | 20% |
| 90-135 135-182 | 50% 50% | 35 % 30 % | | • | 5% 0% |
| 180-225 225-270 | 50% 15% | 35 % 70% | | · | 5 % . 5 % |
| 270-315 | 50% | 30% | | 2 | 0. 27 J |
| 315-360 | 30 % | 50% | | 26 | 72 |
| minary PFAR(s)? _ | Yes√_No | Preliminary PFAR N | umber(s): | | |
| Clarification Form(s)? | Yes <i>U</i> _ Nο | Clarification Form F | Page No.(s | s): | |

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DOC NO.

POSTFLIGHT OBSERVATION RECORD (PFOR) C-8 Flexible Bearing, Flexible Bearing Protector, and Flexible Boot Condition

| Flexible Bearing, Flexible Bearing Protector, and | Flexible Boot Condition |
|---|---|
| Motor No.: 360L029 Side: Right (B) | Date: 27 JAN 1993 |
| Assessment Engineer(s)/Inspector(s): Jim Passman, TREI | DE FRESTON, WILKES |
| Flexible Bearing, Bearing Protector, and Boot Observations; A. Bearing Protector Burn-Through? B. Cracks Through the Bearing Protector? C. Bearing Protector Heat Effects or Erosion Other Than at Cowl Vent Hole Locations? D. Soot Between the Bearing Protector and Flexible Bearing? E. Heat Effects to the Flexible Bearing? F. Bent or Broken Bearing Protector Bolts? G. Flexible Boot Burn-Through? H. Abnormal Heat Effects or Erosion to Flexible Boot ID? I. Foreign Material in Boot Cavity? | Yes No Comment # |
| Notes / Comments | |
| Special Issue 3.3.1 NO ABNOTHE EROSISM OR OF CHICKED ON THE BEAKING FLEX BOOT ID AMOUND FUR | PROTECUA OD OR ON THE |
| "minary PFAR(s)? Yes No Preliminary PF | ORIGINAL PAGE IS OF POOR QUALITY AR Number(s): |
| Clarification Form(s)?YesNo Clarification Fo | rm Page No.(s): |
| REVISION DOC NO | TWR-64222 |

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SPACE OPERATIONS

POSTFLIGHT OBSERVATION RECORD (PFOR) C-9 Flexible Bearing Protector Thickness Measurements

| Motor No.: 360 |)L029 | Side: | Right (B) | | Date: > | -17 |
|--------------------|---|-----------|--------------------|-------------------------------------|-------------------------|---|
| Assessment Eng | ineer(s)/inspecto | r(s): | P. Muste | CSCIE , MENE | YOURE SR | |
| Record the Flexi | ble Bearing Prote | ector Gas | Impingen | nent Área Thickness | Measurements | (see figure) Below: |
| Degree Location | Thickness Measurement "A"" (inches) | ī | Degree .ocation | Thickness Measurement "A"* (inches) | Degree Location | Thickness Measurement "A"" (inches) |
| 0 | 719 | | 120 | .685 | 240 | 2707 |
| 10 | .712 | | 130 | 1695 | 250 | <u>. 679</u> |
| 20 | , 726 | | 140 | <u> 6.9%</u> | 260 | <u>, 616</u> |
| 30 | . 735 | | 150 | 1_663 | 270 | <u> مین کار م</u> |
| 40 | . 7-1.2 | | 160 | 696 | 280 | 2 727 |
| 50 | <u> </u> | | 170 | · 316 | 290 | 2 |
| 60 | ,712 | | 180 | 710 | 300 | 191 |
| 70 | . 71.4 | • | 190 | 110 | 310 | <u>- 673</u> |
| 80 | <u>. 696</u> | | 200 | 7/5 | 320 | - 166 |
| 90 | <u>. 765</u> | | 210 | · 765 | 330 | <u>• //7</u> |
| 100 | <u>· 673</u> | | 220 | 7/5 | 340 | <u>· 703</u> |
| 110 | <u> </u> | | 230 | 1 30 | 350 ∼ ∂262 G2 | <u>· 125</u> |
| | | | | 700 | 74 93 | |
| | | | , , | | Essen | |
| | | | 4 | | ZN/X | |
| "A" | 7. // | | | A" is the minimum | thickness of th | e bearing protector |
| | | | | ne with the cowl ve | | responds to the |
| | | | deep | pest gas impingem | ent location. | |
| स | | | | | | |
| Notes / Commo | | | | | | |
| Notes / Comme | 9111 .0 | | | | | |
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| 'Iminary PFA | AR(s)? | /es | No | Preliminary PF/ | R Number(s): | |
| Clarification For | rm(s)? | /es | No No | Clarification Fo | rm Page No.(s): | |
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| revision _ | | | | DOC NO | | VOL |
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POSTFLIGHT OBSERVATION RECORD (PFOR) C-10 Throat Diameter Measurements (Data Collection Only)

| Throat Diameter Measurements (Data Collection Only) | | | | | | |
|---|--------------------|-------------------------------------|----------------|----------|--|--|
| Motor No.: 360L029 | Side: Right (B) | | Date: 01-28-93 | | | |
| Assessment Engineer(s)/Inspector(s) | R.R. GAllegos | Jed BENSON | / | | | |
| Record the Nozzle Throat Diameter | | : | | | | |
| | Degree Location | Diameter Measurement (inches) | | | | |
| | 0 | 55. 983" | | | | |
| | 45 | 55. 990" | | | | |
| | 90 | 55. 987" | | | | |
| | 135 | 55.960 | | | | |
| Notes / Comments | | | | | | |
| 51-45062 | | | | | | |
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| .ication Form(s)?Yes | No Cla | rification Form Page | | <u>}</u> | | |

DOC NO.

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POSTFLIGHT OBSERVATION RECORD (PFOR) C-11 Outer Boot Ring Char and Erosion Measurements and Flexible Boot Condition

| | Outer Boot | Ring Char an | d Erosion M | Measurement | ts and Flex | ible Boot Co | ndition | |
|------------------|---------------|---------------|-------------|-------------|--------------|--------------|----------|-----------|
| Motor No.: 360 | DL029 | Sic | de: Right | (B) | | Date: 3 | 13/99 | |
| Assessment Eng | ineer(s)/Ins | pector(s): < | Jim Pa | ssmell, | MARKE | 1421 | <u> </u> | |
| Flexible Boot/Ou | ter Boot Rin | | Observatio | | | | | comment # |
| Record the Oute | er Boot Ring | Char and Er | osion Meas | urements Be | low: | | | |
| Station | 0 | | 90 | | | 80° | 2' | 70° |
| Location | Erosion | Char | Erosion | Char | Erosion | Char | Erosion | Char |
| 8.0 | | <u>0.93</u> * | | 1.04 * | | 1,01* | | 0.91* |
| 9.0 | 0.08 | 0.85 | 0.06 | 0.87 | 0.09 | 0.84 | 0,04 | 0.84 |
| 10.0 | 0.11 | 0.87 | 0.05 | 0.88 | 0.08 | 0.82 | 0.03 | 0.86 |
| 11.3 | 0.18 | 0.8/ | 0.07 | 0.98 | 0.06 | 0.90 | 0.09 | 0.87 |
| Negative Ma | argin of Safe | | Yes _ | No | Statio | n: | Degree: | |
| ord the Num | ber of Piles | Remaining o | n the Flexi | bie Boot: | | | | |
| | | | Degree | PI | ies | | | |
| | | | Location | Rema | aining | | | |
| | | | 0 | <u></u> | 4 | | | |
| | | | 90 | <u> 3.</u> | 7 | | | |
| | | | 180 | <u>4.</u> | .0 | | | |
| | | | 270 | <u> </u> | <u>3</u> | | | |
| Neg | gative Margii | n of Safety? | | Yes V | No | Degree: | | |
| Notes / Commen | its | | | | | | | |
| * T | OTAL | Chae | AND E | exosion/ | | | | |
| | | | | | | | | |
| | | | | | | | | |
| P: minary PFAR | (s)? | _ Yes\ | No | Preliminar | y PFAR Nu | mber(s): | | |
| fication Form | n(s)? | _ Yes | No | | | ge No.(s): _ | | |
| DEMISION | | | | C | DOC NO. T | WR-64222 | VOL | |

SEC

PAGE C-41



| | Nozzi | e Subasse | mbly Pher | nolic Bond | line Cond | ition | | | |
|--|-------------|-------------|------------|-------------|------------|----------------|-----------|----------------------------|-------------|
| Motor No.: 360L029 | | Side: R | ight (B) | | | Date: 5 | FEB 199 | 13 | |
| Assessment Engineer(s)/Ins | spector(s) | : Jim | PASSMA | U, PETE | MillE | | • | | |
| Phenolic Subassembly: A | ft Exit Cor | e Assemb | | • | | | | | |
| Record Primary Bondline/P | henolic Fa | ilure Mod | e Percenta | age (After | Hydrolase | and Wed | ge Remov | /ai): | |
| | | | | Degree | Location | | | | |
| Sector to Adhard | 0-450 | | | 135°-180° | 180-225 | 225-276 | 270-315 | 315000 | +5+ . |
| Metal-to-Adhesive | | 5% | 5% | 50% | 50 % | 25% | 5% | 5% | |
| Within Adhesive | | | | ļ | | | | | |
| Adhesive-to-GCP | | | | 20 % | 20% | 30 % | 10% | 5% |] ; (|
| Within GCP | 100% | 95% | 95% | 30% | 302 | 45% | 85% | 90% | 71 |
| GCP-to-CCP | | | | | | | | | |
| Within CCP | | | | | | | | | |
| | | | | | | | | _ | • |
| Record Secondary Bondline | Failure N | fode Perce | entego (Af | Hor Bomo | ent of Dom | animina Dh | | | |
| , | | | amage (A | | | aining Ph | enolics): | | |
| | 0-45 | 1150 900 | 00 120 | /35-/80° | Location | اسموممه | م م | ه م هما | 1 |
| Metal-to-Adhesive | 13 | 95-70 | 90-155 | 135-180 | 180-205 | 20-210 | 20315 | 315-0 | } |
| Within Adhesive | | | | | | | | | - |
| Adhesive-to-GCP | 100% | 100% | 100% | 100% | 100 % | 100 70 | 100% | 1007 | |
| | | | | - 30 | 1.00 75 | ic io | 100.0 | 10070 | l |
| Phenolic Removal N | /lethod: _ | WEDGE | - HANT | PEEL. | UCRY DI | Foot, C | OU BUT R | emove A | <u>'-1)</u> |
| | | | | | | | | | |
| Metal Housing Bondline Sur A. Soot? | TECE UDS | ervations: | | | Ye | . 1 | No | Comment | # |
| B. Voids in Adhesive? | | | | | | <u> </u> | <u> </u> | (1) | — |
| C. Corrosion? D. Foreign Material? | | | • | | | | | (2) | _ |
| E. Voids in Polysulfide | (Aft Exit C | Cone Polys | ulfide Gro | ove)? | | - ' | | (3) | _ |
| | | | | | | | | | |
| Notes / Comments | מעב שם | O PORTE | הכריבה מ | EROM E | END END | AAR 05. mil | 7 0 (0°) | a:a/ 04 | 10"= |
| (2) MEDIUM CORROSIO | NIN AD | Hesiuf /N | DETAL FA | HILVEE A | REAS A | -ROM 13 | 5-270 | rum xuri D ^o | CIZC |
| (1) ONE USID NOTED, (2) MEDIUM CORROSIO (3) SMAIL VOIDS LOCA GROOK IN SEVEN | TED INF | EZMITTER | Hy Full | CIRC. F | Blysufi | HE DID | NOT FO | W/Y Fil | / |
| | | | | | | | | , | |
| | Yes | _/_ N | o Pro | eliminary f | PFAR Num | ber(s): | | | |
| Clarification Form(s)? | Yes | N.P. | o Cla | arification | Form Pag | e No.(s): . | 9 | C-42A | |
| PENCION | | | | DOC | NO. TW | R-64222 | VOL | | |
| REVISION | | | | SEC | | | C 12 | | |

General Hardware Clarification Form

| Motor No.: 360L029 | Side: Left (A) | Right (B) | Date: | 10 FEB 1993 |
|------------------------------------|---|--|---------------|------------------------|
| Assessment Engineer(s)/Inspector | (s): Jim PA | SMAN | | |
| Description: AFT EX | IT CONE POLY | sulfide GR | OUE A | Fill |
| Sketch Observations Below (include | de locations and sizes | of sketched featu | ires): | |
| Polysulfide Filled GROUE | AFT EXIT CONE HOUSING | Gla- | SS THENO | lic |
| PONSUFIDE | | | \rightarrow | |
| | AREA WHERE POINT FILL GROOTE. AT TOTAL KENGTH OF CONDITION WAS ON ON (1) 45° SECT PHENGLIC. | oprox. 25% of Groove. U/y observed ion of Remov | eD | Pelysulfine GROOME |
| | C | Corresponding Co | mment Nu | mber(s):(3) |
| REVISION | | DOC NO. | TWR-642 | 22 VOL PAGE C - 42A |



| | NOZZI | SODESSE | mbly Phen | olic Roualli | ne Con | aition | | | |
|--|------------|------------|--|---------------|----------|--------------|---|---------------------------------------|--------|
| Motor No.: 360L029 | | Side: Ri | ght (B) | | | Date: / | 1-29-9 | 3 | |
| Assessment Engineer(s)/Ins | pector(s): | · WILK | ES/F, | KESTON | 1/1A | 6E/5 | V11315 | 12.00 | 7. |
| Phenolic Subassembly: Fo | rward Exi | t Cone As | sembly | | | | • | · · · · · · · · · · · · · · · · · · · | , |
| Record Primary Bondline/Ph | enolic Fa | ilure Mode | Percenta | ge (After H | lydrolas | e and We | dge Remo | /al): | |
| SEE 15TE 1 | | | | Degree | Locatio | n | | | |
| | 2-7.2 | 190-180 | 180-270 | 270-360 | | | | | ı |
| Metal-to-Adhesive | 25 | 30 | 25 | 20 | | | | 15 15 | ! ! |
| Within Adhesive | 10 | 10 | 10 | 10 | | | | 10 | |
| Adhesive-to-GCP | 65 | 60 | 65 | 70 | | | | 45 | |
| Within GCP | | | | | | | | | |
| GCP-to-CCP | | | | | | | | | |
| Within CCP | | | | | | | | | |
| | <u> </u> | <u> </u> | <u>. </u> | <u> </u> | ····· | | <u></u> | <u> </u> | I |
| | | | | | | | | | |
| Record Secondary Bondline | Failure N | Mode Perc | entage (Af | ter Remova | al of Re | maining f | Phenolics): | | |
| N.A. | | | | Degree | Locatio | n | | | |
| / ' · / / , | | | | 1 | | | | | |
| Metal-to-Adhesive | | | | | | | | | |
| Within Adhesive | | | | | | | | | |
| Adhesive-to-GCP | , | | | | | | | | |
| | | | | | | | | | |
| Phenolic Removal N | Method: | | · | | | | | | |
| Motal Hausian Bandling Sur | | | | · | | | | _ | |
| Metal Housing Bondline Sur A. Soot? | TACE UDS | ervations: | | | Y | 'es | No | Comment | # |
| B. Voids in Adhesive? | | | | | | | | 2 | _ |
| C. Corrosion? | | | | | | | | 3 | _ |
| D. Foreign Material? | | | | | _ | | | | |
| Notes / Comments Ø 54 | EE CL | PRIEIR | F TTON | FOR M | PAGO | E C-4 | 3A FOR | DEVATO | , e s |
| FICE MORICEL PHE | "OLIC X | PEMOUR | L PROC | モウセドモ | S. | , | | | |
| @ SEE PECK CLAP SI | FTTON | FORMI F | AGE C | - 430 . | -, - A | Kaci D | 95201 | = 7715 | |
| 3 THE PED-TO-H | X AFT | 4-16-8 | RINCHES | ANDA | ROUND | 30% | FCIFCE | / / / / · | ,- |
| CONTRACTOR STORES | WCHES. | NO COPK | 05/01 0 | N. Ex Paris | - M | D-5ET 170 | Nº Nº A | C SUFFE | · · |
| minary PFAR(s)? | Yes | | lo Pr | eliminary P | FAR NU | ımber(s): | | | |
| Clarification Form(s)? | Yes | | lo Cl | arification F | Form P | age No.(s) | : C-43/ | ÉB | |
| \-\(\frac{1}{2}\) | | · | | | | | · | ··· / | |
| DESCRIPTION OF THE PROPERTY OF | | | | DOC I | NO. T | WR-64222 | 2 VOL | | |
| REVISION | | | | SEC | | | AGE C-43 | | |

REVISION ____

| | | General Hardware Clarification Form |
|-----------------|--|---|
| Motor No.: | 360L029 | Side: Left (A) P Right (B) Date: 1-29-93 |
| Assessment | Engineer(s)/Inspector | (S): WILKES/FRESTEN/LANGE/SIMMONS |
| Description: | PHENICHIC BONDS | INE CONSIDER, FWD EXIT COME ASSEMBLY. |
| SET AT 19. T | CLARTE ICATIO | de locations and sizes of sketched features): N FERM PAGE C-16A FOR MORMAL PROCEDURE REMOLAL. NOZILE END EXIT ONE HAD 4.0 TO 8 CHICKS |
| 25 (6 % 1 | MODIFIED MEDICALE SAIN CHE W WEDGES MED ANTENT SEPA | THIS BAND WAS LOWATED ONE 1154 FROM ON AFT END, AROUND FULL CO, CO FERFICE SECTION SHOWED COS/GCP SEPARATONS. AN MEDIAN THROUGH THE COD TO THE GCP INTERFACE. PARATED AT GCP/CCP INTERFACE. THE FWD ON THE GOP/CCP INTERFACE EXCEDT FOR A THIS BAND WAS LOWATED ONE 1154 FROM |
| | · | ORIGINAL PAGE IS OF POOR QUALITY |
| | | Corresponding Comment Number(s): / |

DOC NO. TWR-64222 VOL

SEC PAGE (-43/2)

REVISION ___

Nozzle Subassembly Bondline Adhesive Void Clarification Form

| sessment Engineer zzle Subassembly: | | Left (A) Right (B) Date: | 2-2-93 |
|---|-----------------------------|-------------------------------------|-------------------|
| zzle Subsesemble | r(s)/Inspector(s): W/LK | ES/MILLER | · |
| Cabassiiibly. | FWD EXIT CON | IES | |
| cord Bondline Adh | nesive Void Measurements an | nd Locations Below: | |
| Degree | Void Size | | anding Conform |
| Location | Axial Circ. | Location on Bo Distance From Fwd | Distance From Aft |
| : × · · · · · · · · · · · · · · · · · · | .60 .30 | | E.70 |
| | | | |
| | | | |
| | | *** | |
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| | | | |
| | | | |

DOC NO.



| | | | , | | | | | |
|--------------------------------|-----------------|------------|-----------------------------|---------------|---------------------------------------|---------------|--------------|--|
| Motor No.: 360L029 | | Side: Ri | ght (B) | | | Date: 29 | JAN 19 | 93 |
| Assessment Engineer(s)/Insp | pector(s): | Jim | PASSA | DAN, T | 2EUOR | FRESTO | N | |
| Phenolic Subassembly: The | roat Asse | | | | | | | |
| Record Primary Bondline/Pho | enolic Fai | lure Mode | Percenta | ige (After I | lydrolase | and Wedge | Removal): | |
| | | | | Degree | Location | 1 | | |
| I | 450-1350 | 11350-2250 | 122502150 | 315-45 | | 1 1 | Itota | : 1 |
| Metal-to-Adhesive | 75 | 100 | 100 | 100 | : | | 94 | |
| Within Adhesive | | | | | | | | |
| Adhesive-to-GCP | 20 | | 4 | | · · · · · · · · · · · · · · · · · · · | | 5 | |
| Within GCP | 5 | | | | | | | |
| GCP-to-CCP | | | | | | | | |
| Within CCP | | | | | | | | |
| | | | • | | | | <u> </u> | |
| | | | | | | | | |
| Record Secondary Bondline | Failure M | lode Perce | entage (Ai | | | | nolics): | |
| | | l . | ı | Degree | Location | 1 1 | ı | 1 |
| Metal-to-Adhesive | | 1 | | | | | | _ |
| | | | A | | | + + | | |
| Within Adhesive | | | | | | | | |
| Adhesive-to-GCP | | | <u> </u> | <u> </u> | | <u> </u> | | |
| Phenetic Removal M | ethod: | | | | | | | |
| | | | | | | | | |
| Metal Housing Bondline Surf | ace Obse | rvations: | | | Ye | s Ne | o Comm | nent # |
| A. Soot? B. Voids in Adhesive? | | | | | | | | |
| C. Corrosion? | | | | | <u> </u> | | | <u></u> |
| D. Foreign Material? | | | | | | <u> </u> | | |
| | | | | | | | | |
| Notes / Comments | | a =" .(| - 450 | 250 Km at | ion. M | 2011 / 11 - i | 1:-11 | |
| (1) WORMHOLE VOIDS O | 00 AF1 2 EU/ | 8.5 Ot | - 73 -1 1 En ul 2 | 1132 CE | (| INX COUDIT | PIA) TUDIC | PALLY |
| 6.5" Axial by AT 0.10" to 0.2 | 25" 7" | AC. A | וב משין י די מעניק | La Hen | S AZ | OUND TO | = CIECUMFA | ERENCE. |
| (2) Corrosion - M | 150 ium | to Hea | WY FOU | ו מם ממ | 41) AR | eas of M | PETAL to ADA | ies ive |
| FAILURE. | | , | • | | | - | | |
| minary PFAR(s)? | Yes | N | lo Pr | eliminary P | FAR Nur | mber(s): | | ************************************** |
| Jarification Form(s)? | Yes | N | lo CI | arification (| Form Pag | ge No.(s): _ | | |
| | | | | | | | i | |
| REVISION | | | | DOC | NO. T\ | VR-64222 | VOL | |
| | | | | JEU | | المحدد | C-44 | |



| Motor No.: 360L029 | | | ght (B) | | | Date: 2/# | 193 | | |
|-----------------------------|---------------------|------------|--------------|------------|------------|----------------|---------------|------------|--------------|
| Assessment Engineer(s)/Ins | pector(s): | R.Qu | ick | T. FRE | HOTE | | | | |
| Phenolic Subassembly: Af | t Inlet/For | ward Nose | Rings | - W | | - 1 | | | |
| Record Primary Bondline/Ph | nenolic Fa | ilure Mode | Percenta | ge (After | Hydrolase | and Wedg | ge Remova | ai): | |
| | | | | | Location | • | | , | |
| | 10-45 | 145.90 | 190-135 | | | 225-276 | 1770-315 | 215-0 | |
| Metal-to-Adhesive | 100% | 100% | 100% | 100% | 100% | 100% | | 100% | 00 |
| Within Adhesive | | | | | | / 55/- | | 75575 | - |
| Adhesive-to-GCP | | | | | | | 40% | | 7- |
| Within GCP | | | | | | | | | |
| GCP-to-CCP | | | | | | | | | |
| Within CCP | | | | | | | | <u></u> | 1 |
| | | | | <u> </u> | L | <u></u> | 1 | L | 1 |
| | | | | | | | | | |
| Record Secondary Bondline | Failure M | lode Perci | entage (Af | ter Remov | /al of Rem | aining Pha | anolice): | | |
| | ٠ | | 3 , , | | | | | | |
| | | | L | negree | Location | 1 | ! | 1 | |
| Metal-to-Adhesive | | | | | | | | | |
| Within Adhesive | | | | | | | | | |
| Adhesive-to-GCP | | | | | | | | | |
| Adnesive-10-GCP | | | | | | | | | |
| Phenolic Removal N | Anthod. | | | | | | | | |
| - THEHOIC HEMIOVAL IN | | | | | | | | | - |
| Metal Housing Bondline Sur | face Obse | ryations: | | | Yes | | lo (| Comment | # |
| A. Soot? | | | | | | | <u>/</u> | | " |
| B. Voids in Adhesive? | | | | | | | | EE SPECIAL | I ISSUES |
| C. Corrosion? | | | | | | | - | | |
| D. Foreign Material? | | | | | ***** | | <u> </u> | | _ |
| Notes / Comments /- ME | DIUM C | ORROS/ | ON 340 | 0 | | | · | | |
| Mores / Committents | | DICATION | | | | | | | |
| Special Issue 3.3.7 | T MA° AY | 101-12 | CIRCUM | 12 (|) | | | | |
| | | | | | | | Ga | Mary . | |
| Special Issue 3.3.11 335° E | DEFINIUS DEBTA D | AKIAL | 133 C/R | cu11.25 (| LDIJ | | OF | POND | 400 |
| 573 D | ,c,,,, .b, | - AXIAL | · 10 CIN | CUM . 40 | (401) | | | POOR Q | תון ימו |
| minary PFAR(s)? | | | | | | | | |] |
| Clarification Form(s)? | Yes | N | o Cla | rification | Form Page | 9 No.(s): _ | - | | |
| | | | | | | | | | |
| REVISION | | | | DOC | NO. TW | R-64222 | VOL | | |

SEC

PAGE _ 15



| | NUZZIE | JUDASSEI | mbly Phen | iolic Roual | ine Condi | tion | | | |
|--|------------|------------|--------------|-------------|----------------|-------------------|---------------|--------------|----------|
| Motor No.: 360L029 | | | ght (B) | | | Date: 1/1 | 193 | | |
| Assessment Engineer(s)/Ins | spector(s) | R.Qu | ich | T. FRE | | | | | |
| | ose Cap | | | | | | | | |
| Record Primary Bondline/Pl | nenolic Fa | ilure Mode | Percenta | ge (After | Hydrolase | and Wed | ge Removi | al): | |
| | | | | Degree | Location | | | | |
| Motol to Adhasiss | 0-45 | 45-90 | 90-135 | 135-180 | 180-225 | 225-270 | 270-315 | 315-0 | |
| Metal-to-Adhesive | | | | | | | | | |
| Within Adhesive Adhesive-to-GCP | | | | | | ļ | | | |
| Within GCP | | | | | | | | | |
| | 100% | 1000 | 10.01 | 0/ | 01 | 01 | 2/ | 2/ | |
| GCP-to-CCP Within CCP | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | |
| The state of the s | | L | <u> </u> | <u></u> | <u> </u> | | 1 | | |
| | | | | | | | | | |
| Record Secondary Bondline | Failure M | lode Perce | entage (Af | ter Remov | al of Rem | aining Phe | enolics): | | |
| | | | | Degree | Location | | | | |
| | 0-45 | 45-90 | 90-135 | 135-180 | 180-225 | 225-270 | 270-315 | 315-0 | |
| Metal-to-Adhesive | 20% | 20% | | 20% | 20% | 20% | 20% | 20% | |
| Within Adhesive | | | | | | | | | |
| Adhesive-to-GCP | 80 | 80 | 80 | 80 | 80 | 80 | 80 | 30 | |
| Dhanatha Da | | | | | | | | | |
| Phenolic Removal M | vietnoa: _ | | | | | | | | |
| Metal Housing Bondline Sur | face Obse | rvations: | - | | Yes | | lo (| Comment # | |
| A. Soot? | | | | | | - - | <u>/</u> | | |
| B. Voids in Adhesive? C. Corrosion? | | | | | - / | <u> </u> | <u> </u> | SPECIAL IS | <u> </u> |
| D. Foreign Material? | | | | | | | | | - |
| Notes / Comments | TCOERC | OSION A | FT 3.611 | V & FWO | 71.5-2.0 | OIN. E | ULL CIR | ZCUM | |
| 177°N | O INDICI | gtion | | | | | | | |
| Special Issue 3.3,4 90°DE | PTH.OZ | ARIAL- | .37, CIRC | UM = .25 | 3350DP | .62, AXIA | 16=.75,6 | CIRCUM = .4 | 40/LD |
| Special Issue 3.3.5 /2/° N | , | | 20, 6146 | JM = .23 (| נוטו) | | | | |
| | DIONI O | | | | Shacial I | 33U e 3.3. | □ 5 <i>66</i> | P4 C-4 | 15 |
| minary PFAR(s)? | Yes | N | o Pro | eliminary F | PFAR Num | ber(s): | | | _ |
| Clarification Form(s)? | Yes | N | | rification | | | | | |
| | | | | | | | | | → |
| REVISION | | | | 000 | NO. TW | R-64222 | VOL | | |
| | | | | SEC | | PAGE | C-46 | | |



| Motor No.: 360L029 | | | t (B) | , bollullie | | 1-20 | 93 |
|---|-------------|------------|------------|-------------|--------------|------------------|-------------|
| Assessment Engineer(s)/Inspe | | | | | | 1-28 | - / _ |
| | | | 65/ | TEZLE | K = | | |
| Phenolic Subassembly: Cow | l Assembl | y | | | | <u>-</u> - | |
| Record Primary Bondline/Pher | iolic Failu | ire Mode P | ercentage | (After Hydi | rolase and V | Vedge Rem | oval): |
| 1 | 2/01 | | , | Degree Loc | ation | • | |
| _ | 100 | | | | | | |
| | 700 | | | | | | |
| Within Adhesive Adhesive-to-SCP | | | | | | | |
| Within SCP | | | | | | | |
| SCP-to-CCP | | | | | | | |
| Within CCP | | | | | | | |
| | | <u></u> | | | | | |
| | | | | | | | |
| Record Secondary Bondline Fa | ailure Mo | de Percent | age (After | Removal o | f Remaining | Phenolics) | : |
| 1'A | | | | Degree Loc | ation | | |
| | | | | | | | |
| Metal-to-Adhesive | | | | | | | |
| Within Adhesive | | | | | | | |
| Adhesive-to-SCP | | | | | | | |
| Phenolic Removal Met | lhod: | | | | | | |
| Metal Housing Bondline Surface | e Obsen | vations: | | | Yes | No | Comment # |
| A. Soot? | | | | | | | |
| B. Voids in Adhesive?C. Corrosion? | | | | | | | |
| D. Foreign Material? | | | | | | | |
| Notes / Comments 0^{SEE} $0 SEE ^0 TS ON C$ Special Issue 3.3.8 — SEE | PFOR C | LARIFICA | ATION) | FORM PI | ACES C- | 47A E | |
| SEE NOTS ON | LARIF | CATICA | FORM | PACE | C-47D. | | _ |
| Special Issue 3.3.8 - SEE | CLAPI | EICATIO | IN FOR | N PAGE | c-4 1H | NOTE | 2. |
| Special Issue 3.3.11 — SEE | CLAPI | =16770 | N FORIN | PAGE | c-47C | NOTE | 5 / É Z. |
| "minary PFAR(s)? | Yes _ | No | Prelin | ninary PFAF | R Number(s) | : | |
| Clarification Form(s)? | Yes _ | No | Clarifi | cation Forn | n Page No.(| s): <u>C-47A</u> | . 5, C € D |
| REVISION | | | | DOC NO. | TWR-642 | 22 VOL | |

REVISION _

Nozzle Subassembly Bondline Adhesive Void Clarification Form

| Motor No.: 360L029 |) | Side: | Left (A) Pright (B) Date: 1-28-93 |
|---------------------------------------|---|---|--|
| Assessment Enginee | r(s)/inspector(| s): WILK | ESTELLERS |
| Nozzle Subassembly | COWL | | |
| Record Bondline Adl | hesive Void Me | asurements an | nd Locations Below: |
| Degree | Void | Size | Location on Bonding Surface |
| Location | Axial | Circ. | Distance From Fwd Distance From Aft |
| 44 | .30 | .05 | 0.50 |
| 44. | .30 | .10 | 0.60 |
| 47 | ,35 | .20 | 0.50 |
| 47 | .45 | .20 | 2.40 |
| 47 | .40 | .10 | z.95 |
| 49 | .10 | . 45 | 2.70 |
| 56 | , 15 | .65 | 0.30 |
| 1 50 | .70 | ,05 | 1,75 |
| 51 | .10 | .30 | 1.80 |
| 52 | .20 | .30 | 2.00 |
| 52 | _, 35 | ,10 | 1,70 |
| <u>55</u> | .90 | .10 | 0.90 |
| 57 | .30 | .10 | 0.10 |
| Notes / Comments (| DNANY | SMALL A | ADHESIVE VOIDS, O.Z5 IN. DIR. MAX, |
| WERE OFFERD | ED FROM | M 44 | TO 80°. VERY FEW VOIDS WEXE |
| 2 NO ASHE: ASHESIVE, F AT BOAND | COE VOI MED ME MOOWHICE BE NOTED | DS WERE TAL SURF H ALMOST THAT A | CIRCUNIFERENCE. OBSERVED AT 7° AND 9°. HOWEVER FACE PIT REPAIR AREAS WERE CESSIVE CORRELATES TO NOTER LDI SIZES. REPAIR AREA ON THE HOUSING AT ISTED. |
| | | | Corresponding Comment Number(s): /, 3 |

DOC NO. TWR-64222 VOL SEC PAGE (- 47A)

REVISION ___

Nozzle Subassembly Bondline Adhesive Void Clarification Form

| Degree | | easurements and Size | Locations Below: | andina Cuefe e |
|---|----------------------|-------------------------|---|-------------------|
| Location | Axial | Circ. | Location on Bo Distance From Fwd FRON CHAN CORNER | Distance From Aft |
| 57 | .40 | ,10 | 0.50 | |
| 58.5 | .10 | .30 | 0.85 | |
| 58.5 | .10 | ,30 | 1,55 | |
| <i>:)</i> | .90 | .15 | 0.30 | |
| 51-63 | .70 | 3.80 | 0.00 | |
| 59.5 | .35 | .05 | 1.85 | |
| 61 | .40 | .15 | 0.70 | |
| 62 | .55 | .10 | 1,70 | |
| 4+ | .70 | .10 | 1.00 | |
| 66 | . 35 | .05 | 1,95 | |
| 67 | .40 | .10 | 0.90 | |
| 69.5 | .40 | .10 | 0.90 | |
| 70 | .35 | .10 | 0.30 | |
| otes / Comments A 2/6/57 A = T F F O Y A 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | 6 K EEN 5 PK 1116 | STAIN WI PIN AT | AS OBSETUED IN TO 130° TO AFT END CUNFERENCE. THE CORRESPONDING LOC | DOF IN THE |

TWR-64222

DOC NO.

REVISION __

Nozzle Subassembly Bondline Adhesive Void Clarification Form

| Motor No.: 360L02 | 9 | Side: L | _eft (A) P Right (B) Date: 1-28-93 | | | | | |
|--|------------------|----------------------|---|--|--|--|--|--|
| Assessment Engine | er(s)/Inspector(| | | | | | | |
| Nozzie Subassembly | s: cowL | | | | | | | |
| Record Bondline Ac | thesive Void Me | asurements and | Locations Below: | | | | | |
| Degree Void Size Location on Bonding Surface | | | | | | | | |
| Location | Axial | Circ. | Distance From Fwd FRON CHAN COENER Distance From Aft | | | | | |
| 79.5 | .50 | .10 | 0.10 | | | | | |
| 76 | .30 | .10 | 0.00 | | | | | |
| 275 | .30 | .05 | 3.60 | | | | | |
| 276 | .30 | .15 | 0.20 | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| * 0 | .40 | .50 | 0.50 | | | | | |
| 1 8 | ,30 | 30 | 0.30 | | | | | |
| + 10 | .40 | .40 | 0.50 | | | | | |
| 7 261 | .20 | .50 | ON CHAM SURFACE | | | | | |
| ¥ 272 | .25 | .45 | ON CHAN SUPERCE | | | | | |
| * METEL | HOUSING | BCN'DL 10 E | SUPERCE PIT REPAIR AKEAS | | | | | |
| Notes / Comments | DSEE PF | CR CLARIF | FICHTICAL FORMS PAGES C-47 A, B & C | | | | | |
| TOK AGAES | | | | | | | | |
| (2) FIVE ME DECCY BET NOT THE E IM PHOTOS | TH BECAU | T ITEMS CE REPAIR | REPAIR AREAS WERE LOCATED AS IN ABOVE CHART. PHOTOS WERE R AREAS WERE TOO SHALLOW TO APPEAR | | | | | |
| * | | | Corresponding Comment Number(s): / 4 | | | | | |
| | | | Corresponding Comment Number(s): 1, 4 | | | | | |

DOC NO.

Nozzle Subassembly Bondline Adhesive Void Clarification Form

| Motor No.: 360L029 |) | Side: L | eft (A) Right (B) | Date: 1-28-93 |
|---|-----------------------------------|-------------------------------|--------------------|--|
| Assessment Enginee | er(s)/inspector(s | | | , |
| Nozzie Subassembly | : COWL | | | |
| Record Bondline | hosive Void Mea | surements and | Locations Below: | |
| Degree | Void 9 | Size | Location | on Bonding Surface |
| Location | Axial | Circ. | Distance From Fwd | Distance From Aft |
| <u> </u> | 2.80 | 0,20 | 0.00 | |
| 7 | Z.90 | 0.20 | 0.00 | |
| 40-43 | 1,00 | 2.50 | 0.00 | |
| 294-302 | 3,50 | 6,00 | 0.00 | • |
| 310-318 | 2.00 | 5,00 | 0,00 | |
| | | | | |
| <u> </u> | | | | · · |
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| | | | | |
| DEVENOUS OF AFTER ATTER AFTER ATTER AFTER ATTER AFTER ATTER | FULL BE FIND OF FIND LISTED | DARK GR DARK GR IN ABOU | AY MEDIUN CO. | ETWO AT 3° E 7 |
| | | | Corresponding Com- | ORIGINAL PAGE OF POOR PAGE ent Number(s): 2 |
| | | | Corresponding Comm | ent Number(s): |
| REVISION | | | DOC NO. TW | PAGE (-47 D |

,这是一个时间,我们就是一个时间,我们就是一个人的,我们就是一个人的,我们也没有一个人的,我们也会会的,我们也会会的,我们也是一个人的,我们也会会的,我们也会会

| POSTFLIGHT OBSERVATION RECORD (PFOR) | C-12 |
|---|------|
| Nozzie Subassembly Phenolic Bondline Cond | |

| | Nozz | ie Subasse | mbly Phe | nolic Bond | dline Conc | iition | | | |
|---------------------------------------|--------------|--------------|------------|-------------|-------------|----------------|-------------|--|------|
| Motor No.: 360L029 | | Side: F | Right (B) | | | Date: 3 | /Fel/9 | , 3 | |
| Assessment Engineer(s)/In | spector(s |): Jim | Passman | J. PETE | M.Iler | | | | |
| Phenolic Subassembly: F | ixed Hous | | | | | | | | |
| Record Primary Bondline/P | henolic F | ailure Mod | le Percent | age (After | Hydrolase | and Wed | ge Remov | | |
| | | | | Degre | e Location | 1 | | | |
| Metal-to-Adhesive | 0-45 | 45-90 | | | | | 270.3/3 | 315-360 | TETL |
| | 15 | 3 | 5 | 5 | 10 | 15 | 15 | 10 | 10 |
| Within Adhesive Adhesive-to-GCP | | | | <u> </u> | | | 1 | | 1 |
| Within GCP | 85 | 0.7 | 97 | 0 = | 0.0 | 1. | <u> </u> | | |
| | 05 | 97 | 95 | 95 | 90 | 10 | 15 | 90 | 172 |
| GCP-to-CCP Within CCP | | | | | - | \$ 75 | 70 | | 18 |
| | <u> </u> | | J | <u> </u> | | | <u> </u> | <u></u> | |
| | | | | , | | | | | |
| Record Secondary Bondline | Failure M | Mode Perc | entage (At | ter Remo | val of Ren | naining Ph | enolics): | | |
| | | | | Degree | Location | | | | |
| • • | 0-45 | 45-90 | 90-135 | 135-180 | 180-225 | 225-270 | 270-315 | 315-360 | |
| Metal-to-Adhesive | | _ | | | <u> </u> | | | | |
| Within Adhesive | | | ļ | | | | | | |
| Adhesive-to-GCP | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | |
| Phenolic Removal 1 | Method: | | | | | | | | |
| Metal Housing Bondline Su | rface Obs | ervations: | | · <u>-</u> | Ye | s ! | No , | Comment | # |
| A. Soot? B. Voids in Adhesive? | | | | | | - - | <u></u> | 1 | |
| C. Corrosion? | | | | | | | <u></u> | | |
| D. Foreign Material? | | | | | - | - - | <u> </u> | | _ |
| Notes / Comments 1) See Classicalida | n Falsa | | | | | | | | |
| ±) 5(6 - 6/4 - 54/7 - 5 | , , , | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| liminary PFAR(s)? | Yes | | o Pre | oliminary F | PFAR Num | nber(s): | | | |
| Clarification Form(s)? | <u>√</u> Yes | N | o Cla | rification | Form Pag | e No.(s): _ | C-48A | | |
| REVISION | | | | DOC | NO. TW | R-64222 | VOL | | |
| | | | | SEC | | PAGE | C-48 | | |

REVISION _

Nozzle Subassembly Bondline Adhesive Void Clarification Form

| Motor No.: 360L029 | 9 | Side: L | eft (A) Right (B) Date | : 3 FEB 1993 |
|--------------------|------------------|---------------|-------------------------|--------------------|
| Assessment Engine | er(s)/Inspector(| (s): Jim Pass | SIMMA, DETE MILER | |
| Nozzle Subassembly | : Fixed H | /9/12vc | | |
| Record Bondline Ad | | ^ | Locations Below: | |
| Degree | Void | Size | Location on Bo | onding Surface |
| Location | Axial | Circ. | Distance From Fwd | Distance From Aft |
| <u>30°</u> | 0.50 | 0.30 | | 3.9 |
| 182° | 0.60 | 0.20 | | 4.9 |
| 235° | 0.50 | 0.20 | | 1.2 |
| 268° | 0.80 | 0.30 | | 2.1 |
| <u>315°</u> | 0.50 | 0,30 | | 0.70 |
| | | | | |
| | | | | |
| | | <u>·</u> | | |
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| | | | | |
| Notes / Comments | | | | |
| | | | | |
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| | | | | |
|) Na | | - | Corresponding Comment N | umber(s): (-48 (i) |

DOC NO.

SPACE OPERATIONS

POSTFLIGHT OBSERVATION RECORD (PFOR) C-13 Cowl Ring Phenolic (CCP) Section Condition

| Motor No.: 360 | DL029 | | Cide: Disk | | ion Condition | '' | 1 1 00 | |
|---|--------------------------|---------------------------|---------------|-------------------|----------------------|---|-------------------|--------------------|
| Assessment Eng | | | Side: Right | | | Date: | 6-10-93 | , , |
| Cowl Phenolic S A. Cross-ply B. Ply lifting | ection Observerseling in | ervations: n virgin ma | Y | es | No / | Comment # | | |
| Record the Cow | | | | | | | | |
| Station Location | Erosion | ° Char | 90 Erosion |)° Char | 180° Erosion Char | | 270° | |
| 0.3 | .21 | .52 | 123 | . 5 7 | Erosion → 4 | .54 | Erosior つつ | |
| 1.0 | , 54 | .51 | <u> </u> | .62 | .30 | ·53 | <u>,27</u> ,25 | <u>.54</u> |
| 2.0 | | ,41 | .3) | 54 | ·30 ·34 | .50 | ·33 | <u>.56</u> |
| 3.0 | ,37 | .61 | ,30 | .54 | .37 | · 30 | ,34 | <u>. 62</u> .53 |
| 4.0 | .37 | .59 | ,34 | .58 | .35 | .50 | .39 | .67 |
| 5.0 | | .59 | NA | 11A | NA | 11K | NA | - NA |
| 6.0 | | 3.997 | | 0.98* | | 197* | <u>NII</u> | 1.05* |
| 6.8 | | 0.69* | | 0.99* | | 0.99* | NA | NA |
| | | | | 3-11 | | <u> </u> | <u> 1017</u> | 7071 |
| Negative Ma | rgin of Saf | ety? | Yes | No | Station | n: | Degree | • |
| Notes / Commer | nts V_{\star} | TATAL | (ChAR AK | ID EDOS | (Mari | | - | |
| Special Issue 3. | 1 | ~~!~L | | | | | | |
| | | | | | | | | |
| r iminary PFAR | R(s)? | Yes | No | Preliminar ——— | y PFAR Nu | mber(s): _ | | |
| . fication Form | n(s)? | Yes | No No | Clarification | on Form Pa | ge No.(s) | : | |
| REVISION _ | - | | | - | DOC NO. T | WR-64222 | VOL | |



POSTFLIGHT OBSERVATION RECORD (PFOR) C-14 Forward Exit Cone Phenolic (CCP) Section Condition

| Motor No.: 360 | L029 | Side: Right (B) | Date: | 10-11- | -92 | | |
|---|-----------------|-----------------|--------------------|---------|-----------------|--|--|
| Assessment Engineer(s)/Inspector(s): W. Clark | | | | | | | |
| A. Cross-ply B. Ply lifting | | Observations: | Yes | No | Comment # | | |
| Station | 0° | 90° | 180° 270° | | | | |
| Location | Erosion Char | Erosion Char | Erosion Char | Erosi | | | |
| 1.0 | 11/4 /18 | .37 .71 | .39 .67 | .41 | .67 | | |
| 4.0 | | .33 .69 | ,35 .72 | .36 | | | |
| 4.6 | | .32 .70 | .34 .74 | .35 | | | |
| 8.0 | | .31 .74 | , 34 .68 | . 34 | .67 | | |
| 12.0 | | NA NA | NA NA | - | 1.6 | | |
| 16.0 | | | N N | _ | | | |
| 20.0 | | | | | | | |
| 24.0 | | | | | | | |
| 28.0 | | | NA ISA | AU | - NA | | |
| 32.0 | | | .15 .71 | .19 | .68 | | |
| 32.9 | | | .19 .66 | .19 | -63- | | |
| 34.0 | AN AM | ALL ALA | .17 .69 | .19 | .65 | | |
| Negative Ma | rgin of Safety? | Yes No | Station: | Degr | 96: | | |
| Notes / Commen | its | | | | | | |
| | | | | | | | |
| | | | | | | | |
| C Himinary PFAF | R(s)?Yes | No Prelimin | ary PFAR Number(s |): | | | |
| ification Forr | m(s)? Yes | No Clarifica | tion Form Page No. | (s): | 50A | | |
| REVISION _ | | | DOC NO. TWR-64 | 222 VOL | | | |

POSTFLIGHT OBSERVATION RECORD (PFOR) C-19 Forward Exit Cone Phenolic (CCP) Section Condition

| Forward Exit Cone Phenolic (CCP) Section Condition | | | | | | | | |
|---|--------------|---------|-------------|-----------|---------------|------------------|---------|---------------------------|
| | L029 | | Side: Right | (B) | | Date: | 4-8- | -93 |
| Assessment Engineer(s)/Inspector(s): L.E. WILKES | | | | | | | | |
| AFT Exit Cone Phenolic Section Observations: A. Cross-ply cracking in virgin material? B. Ply lifting? Record the Forward Exit Cone Char and Erosion Measurements Below: | | | | | | | | |
| Station 180° 190° 200° 210° | | | | | | | | - 10° |
| Location | Erosion | Char | Erosion | Char | 20 Erosion | <i>ᢕ</i> Char | Erosio | |
| 118:77 | VA | 14 | | .640 | .140 | | NA | |
| 113.77 | .150 | .600 | .190 | | | .570 | .18 | |
| 107.77 | .150 | .580 | .150 | .560 | | .510 | . 160 | 0 .570 |
| 101.77 | .130 | .510 | .150 | .560 | .150 | , 570 | .14 | 0 .560 |
| 95. 77 | 114 | X1 ji | .120 | .550 | .120 | .600 | -110 | 570 |
| 89.77 | | | NA | MA | .110 | . 560 | NF | 77 |
| 83.77 | | | | | NA | NF | | |
| 77.77 | | | | | | | | |
| 73.77 | <u> </u> | <u></u> | | <u> </u> | | \bigvee | 1 | V |
| Negative Ma | rgin of Safe | oty? | Yes _ | No | Station | n: | _ Degre | ·e: |
| Notes / Commer | nts | | | | | | | |
| P Timinary PFAI | | Yes | No | | ary PFAR Nu | | | NAL PAGE IS OR QUALITY |
| REVISION _ | | | | 5.5111100 | | WR-64222 | 1 | |

Thickol CORPORATION

SPACE OPERATIONS

REVISION ___

POSTFLIGHT OBSERVATION RECORD (PFOR) C-15 Fixed Housing Phenolic (CCP) Section Condition

| | | Fixed H | ousing Phen | olic (CCP) S | Section Cond | ition | | |
|-----------------|---|--|--------------------|--------------|--------------|-------------|-------------|-----------------------------|
| Motor No.: 36 | 50L029 | | Side: Right | (B) | | Date: (| a-10-93 | |
| Assessment En | gineer(s)/ln: | spector(s): | M. Clare | | | | | |
| | ly cracking i | | | | \ | /es | No ✓ | Comment # |
| B. Ply lifting | ng? | | | | | | | |
| Record the Fixe | ed Housing (| Char and Er | osion Measu | rements Be | low: | | | |
| Station | 0 | • | 90 |)° | 18 | 0° | 2 | ?70° |
| Location | Erosion | Char | Erosion | Char | Erosion | Char | Erosion | Char |
| 0.0 | • | 1,15 | 80. | 1.16 | .10 | <u>95</u> | 0 | 1.31 |
| 1.0 | .06 | <u>.96</u> | ,04 | <u>.80</u> | .10 | <u> </u> | <u>.54</u> | 31 |
| 2.0 | <u>. * </u> | 115 | | 735 | | 16 | | <u> </u> |
| 3.0 | <u></u> | <u> 198 </u> | 0 | .89 | | <u>.(16</u> | 0 | <u>. 4 </u> |
| 4.0 | | <u>,53</u> | | Ω | | <u>.95_</u> | _ <u> </u> | <u>15</u> |
| 5.0 | | 31 | _0 | 97 | \bigcirc | .93 | _0_ | 134 |
| 6.0 | | 574 | _0 | 12 | 0 | .97 | | 77 |
| 7.0 | | 17 | | 57 | C | 01 | C | • • • |
| 8.0 | | . 11 | | .61 | | 191 | | 176 |
| 9.0 | .12 | .52 | ,17 | .=54 | .06 | -74 | 12. | · / |
| 10.75 | 118 | 1.45 | $f_{\overline{f}}$ | 14: | . 24 | 1.37 | 118 | |
| Negative M | argin of Safe | ety? | Yes | No | o Station | n: | _ Degree: | |
| Notes / Comme | ents | | - | | | | | |
| | | | | | | | | |
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| | | | | | | | | |
| | • | | | | | | C |).p. |
| | | | , | | | | Op | POOL PAGE |
| T (| | • • | | | | | | RIGINAL PAGE POOR QUALIT |
| minary PFA | H(S)7 | Yes | No | Prelimir | nary PFAR Nu | ımber(s): _ | | |
| ification For | rm(s)? | Yes | No | Clarifica | ition Form P | ge No.(s) | : | |
| | | | | | | | | |

DOC NO. TWR-64222

PAGE C



REVISION ____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-16 Throat Inlet Assembly Phenolic (CCP) Section Condition

| Throat Inlet Assembly Phenolic (CCP) Section Condition | | | | | | | | |
|--|-------------------------|------------------|-----------------------|--------------|--|--|--|--|
| Motor No.: 36 | 0L029 | Side: Right (B) | Date: | 3/3/13 | | | | |
| Assessment Engineer(s)/Inspector(s): Jim PASSMAN, CARRY W. ITES | | | | | | | | |
| Throat Inlet Assembly Phenolic Section Observations: A. Cross-ply cracking in virgin material? B. Ply lifting? | | | | | | | | |
| Record the Throat Inlet Ring and Throat Ring Char and Erosion Measurements Below: | | | | | | | | |
| Station | 0° | 90° | 180° | 270° | | | | |
| Location | Erosion Char | Erosion Char | Erosion Char | Erosion Char | | | | |
| 1.0 | 1.06 2.65 | <u>1.06</u> 0.72 | 1.10 0.57 | 1.06 0.53 | | | | |
| 2.0 | 1.59 5.67 | 1.07 0.75 | 1.12 0.57 | 1.13 0.51 | | | | |
| 4.0 | 1.13 0.68 | 1.14 0.67 | 1.16 0.64 | 1.17 0.64 | | | | |
| 6.0 | 1.17 0-66 | 1.18 0.69 | 1.19 0.64 | 1,21 0.64 | | | | |
| 8.0 | <u>1.19</u> <u>6.58</u> | 1.19 0.6Z | 1,19 0.56 | 1.23 0.55 | | | | |
| 10.0 | 1.19 0.60 | 1.19 0.61 | 1.18 0.53 | 1.21 0.50 | | | | |
| 12.0 | 1.15 0.56 | 1.16 0.62 | 1.16 0.53 | 1.18 0.57 | | | | |
| 14.0 | 1.14 0.55 | 1.13 0.65 | 1,15 0.53 | 1.15 0.59 | | | | |
| 16.0 | 1.09 0.55 | 1.08 0.68 | 0.99 0.69 | 1.00 0.68 | | | | |
| 18.0 | 0.99 0.56 | 0.97 0.66 | 0.98 0.63 | 0.96 0.64 | | | | |
| 20.0 | 0.81 0.61 | 0.84 0.59 | 0.81 0.67 | 0.78 0.66 | | | | |
| 22.0 | 0.56 0.67 | 0.54 0.70 | 0.53 0.70 | 0.56 0.63 | | | | |
| 23.0 | 0.45 0.75 | 0.46 0.74 | 0.46 0.70 | 0.42 0.68 | | | | |
| Negative Ma | argin of Safety? | Yes No | Station: | Degree: | | | | |
| Notes / Comme | nts | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | • | | | | | | | |
| | | | | | | | | |
| P ∵minary PFA | R(s)?Yes | No Prelimina | ry PFAR Number(s): | | | | | |
| fication For | m(s)?Yes | No Clarificati | ion Form Page No.(s): | | | | | |
| • | | | | | | | | |

DOC NO.



REVISION ____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-17 Nose Cap Phenolic (CCP) Section Condition

| Motor No.: | 360L029 | | Side: Right | (B) | ion condition | Date: | 3/3/9 | 3 |
|------------------------|---|------------|---------------|-------------|----------------------|------------|---------|--------------|
| Assessment | Engineer(s)/Ins | pector(s): | | PASCMAN . | LAREN | 1 | 9/3/1- | |
| A. Cross B. Ply lif | enolic Section -ply cracking in ting? lose Cap Char a | virgin ma | | es | No (| Comment # | | |
| Station | 0 | | 4 94 | . • | | 700 | | |
| Location | Erosion | Char | 90 Erosion | Char | 180° Erosion Char | | Erosion | 270° Char |
| 1.5 | NA | NA | NA | NA | NA | NA | NA | NA |
| 4.0 | 0.34 | 0.49 | 0.36 | 0.57 | 0.39 | 0.5/ | 0,40 | 0.44 |
| 6.0 | 0.35 | 0.53 | 0.35 | 0.60 | 0.44 | 0.5/ | 0.39 | |
| 8.0 | 0.43 | 0.51 | 0.41 | 0.51 | 0.46 | 0,50 | 0.46 | 0.44 |
| 10.0 | 0.47 | 0.49 | 0.43 | 0.50 | 0.54 | 0.46 | 0.48 | 0.48 |
| 12.0 | 0.53 | 0.46 | 0.51 | 0.52 | 0.59 | 0.45 | 0.55 | 0.45 |
| 14.0 | 0.62 | 0.41 | 0.58 | 0.5Z | 0.7/ | 0.39 | 0.64 | 0.42 |
| 16.0 | 0.68 | 0.47 | 0.67 | 0.47 | 0.75 | 0.41 | 0.72 | 0.46 |
| 18.0 | 0.82 | 0.46 | 0.75 | 0,46 | 0.90 | 6.46 | 0.8 | 3.40 |
| 20.0 | 1.02 | 0.40 | 0.97 | 0.50 | 1.18 | 0.37 | 1.06 | 0.39 |
| 22.0 | 1.52 | 0.56 | 1.45 | 0.67 | 1.72 | 0.51 | 1.59 | 0.57 |
| 24.0 | 1.68 | 0.61 | 1.64 | 0.73 | 1.85 | 0.4 | 1.76 | 0.14 |
| 26.0 | 1.19 | 0.70 | 1.18 | 0.69 | 1.19 | 0.68 | 1.29 | 0.76 |
| Negative | Margin of Safe | ity? | Yes | No | Station | n: | Degree: | |
| Notes / Com | ments | | | | | | | |
| 'iminary P | PFAR(s)? | Yes | No | Prelimina | iry PFAR Nu | ımber(s): | | |
| ification I | Form(s)? | Yes | No | Clarificati | ion Form Pa | age No.(s) | : | |

DOC NO.



REVISION ____

POSTFLIGHT OBSERVATION RECORD (PFOR) C-18 Forward Nose Ring and Aft Injet Ring Phenolic (CCP) Section Condition

| | Forward Nose Ring | and Aft Inlet Ring Phen | olic (CCP) Section Con | dition | | | | | |
|---|---|----------------------------|------------------------|------------------------|--|--|--|--|--|
| Motor No.: 360 |)L029 S | ide: Right (B) | Date: | 3/3/73 | | | | | |
| Assessment Eng | Assessment Engineer(s)/Inspector(s): Jim T-ASSMAN, LARRY WIKS | | | | | | | | |
| Forward Nose and Aft Inlet Ring Phenolic Section Observations: Yes No Comment # | | | | | | | | | |
| 1 | cracking in virgin mate | rial? | | | | | | | |
| B. Ply lifting | B. Ply lifting? | | | | | | | | |
| Record the Forward Nose Ring (-503) Char and Erosion Measurements Below: | | | | | | | | | |
| Station | 0° | 180° | 270° | | | | | | |
| Location | Erosion Char | Erosion Char | Erosion Char | Erosion Char | | | | | |
| 28.0 | 1.15 0.69 | 1.08 0.73 | 1.12 0.59 | 1.19 0.64 | | | | | |
| 30.0 | 0.92 0.63 | 0.92 0.63 | 0.98 0.63 | 0.99 0.55 | | | | | |
| 32.0 | 0.98 0.59 | 0.95 0.62 | 1.01 0.60 | 1.05 0.54 | | | | | |
| Negativo 84a | rain of Colonia | | | | | | | | |
| Negative Ma | rgin of Safety? | Yes No | Station: | Degree: | | | | | |
| Record the Aft In | niet Ring Char (-504) ar | nd Erosion Measurement | ts Below: | | | | | | |
| Station | 0° | 90° | 4000 | | | | | | |
| Location | Erosion Char | Erosion Char | 180° Erosion Char | 270° | | | | | |
| 34.0 | 0.89 0.58 | 0.99 0.48 | O.94 O.56 | Erosion Char 0.97 0.53 | | | | | |
| 36.0 | 0.91 0.59 | 0.99 0.53 | 0.97 0.55 | 0.95 0.55 | | | | | |
| 38.0 | 0.95 0.60 | 0.98 0.51 | 1.0/ 0.61 | 0.97 0.51 | | | | | |
| 39.0 | 0.97 0.67 | 1.01 0.62 | 1.04 0.59 | 0.99 0.56 | | | | | |
| Negative Ma | rgin of Safety? | | | | | | | | |
| | gill of Salety? | _ Yes No | Station: | Degree: | | | | | |
| Notes / Commen | ts | | | | | | | | |
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| r minary PFAR | 1(e)? Vaa | / 110 2 11 1 | | | | | | | |
| | (s)? Yes | No Prelimina | ry PFAR Number(s): | | | | | | |
| C ification Form | n(s)?Yes | No Clarificati | on Form Page No.(s): | | | | | | |
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V. K. Henson, SA51 E613/RMP-FY94-181

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